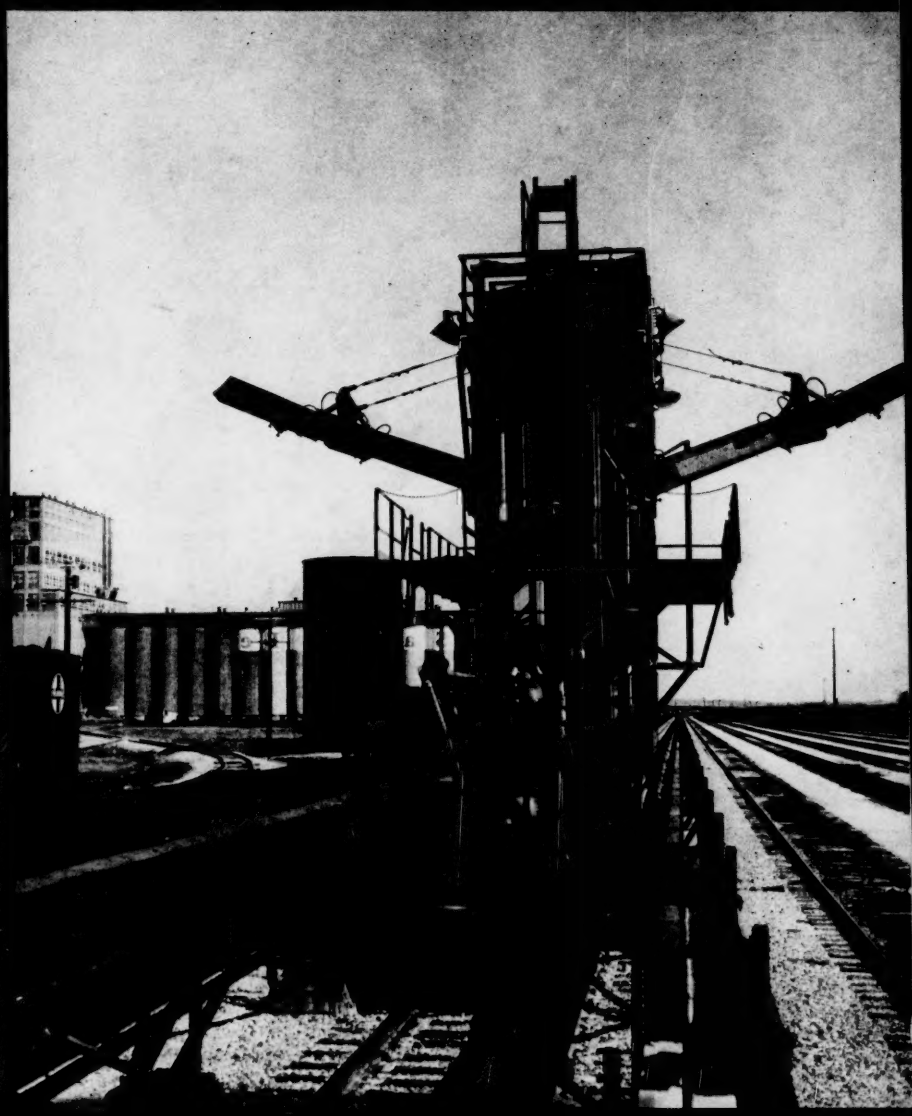
ICE AND Refrigeration



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REFRIGERATOR CAR ICER

Rail giant speeds car icing operation for refrigerated transtation of perishables.

CHICKEN ON ICE

Large packer introduces new "tender grown" chicken requiring one million tons of ice to process and display.

MAKE IT EASY TO BUY ICE

Survey shows proper location of ice vending depots will reach new potential customers for block, cubed and sized ice.

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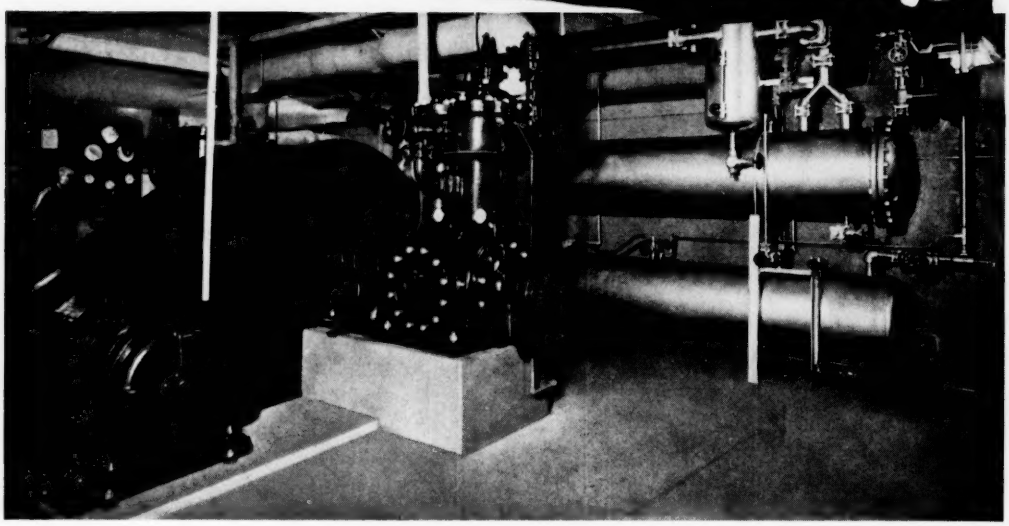
EFFICIENCY UP... COSTS DOWN



. . . WHEN you lubricate refrigerating compressors with Texaco Capella Oils

Your compressors will produce higher refrigeration tonnage at a lower cost when you use *Texaco Capella Oils*. The reasons why can be summed up in eight words: *Texaco Capella Oils* keep compressors and systems clean.

Texaco Capella Oils are highly refined, extremely stable lubricants that are moisture-free and do not react with refrigerants. Their pour tests are very low, and their resistance to carbon, gum, and sludge formations is very high. Thus, *Texaco Capella Oils* keep compressors efficient, give you added compressor life, and reduce your maintenance costs.

You can get *Texaco Capella Oils* in every needed viscosity. Let a Texaco Lubrication Engineer help you select the proper ones to assure best performance from *your* compressors, regardless of size or type.

Call the nearest of the more than 2,000 Texaco Wholesale Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TEXACO Capella Oils

FOR ALL AIR CONDITIONING AND REFRIGERATING EQUIPMENT

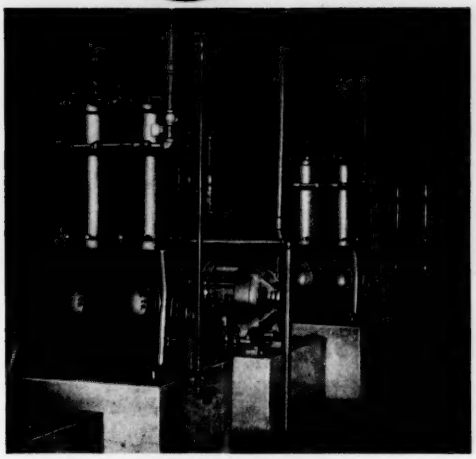
TEXACO

TEXACO STAR THEATER presents MILTON BERLE on television every Tuesday night. See newspaper for time and station.

HERE'S HOWE

SHELL AND TUBE CONDENSERS • Install Now!

(REMOVABLE TUBE DESIGN)



Three 20-ton Howe Compressors

YOU SAVE money, space, labor, time, with Howe individually engineered installations, large or small. You get that constant exact temperature and humidity control which in thousands of plants is keeping products at top quality. Howe Shell and Tube Condensers can be compactly grouped in batteries for multiple installations, for any capacity plant. Both shell and tube and shell and coil types for Freon.

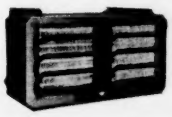
OUTSTANDING FEATURES • **RETUBING** — without special tools • **RETUBING** — without experienced mechanics • **TUBES** — standard material purchasable in any locality.

HOWE EVAPORATIVE CONDENSERS save 95% on water, as well as space. Ideal for restricted water areas.

GET THE BENEFITS of Howe's 38 years of practical, test-proved refrigeration knowledge and their ruggedly built, trouble-free equipment. Write for free booklet, or without obligation consult Howe engineers on your specific problems.

SINCE 1912, BUILDERS *exclusively of refrigeration equipment: Ammonia compressors, standard, multiple effect and boosters, 2 to 150 tons; self-contained automatic ammonia units; Freon condensing units; shell and tube condensers; brine and water coolers; unit coolers; fin coils; locker freezing units; air conditioning (cooling) equipment.*

A few territories still open . . . write for details about the HOWE profit-plan for new distributors.

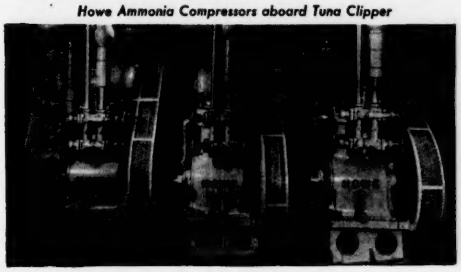


Howe-Conditionaire Unit Coolers

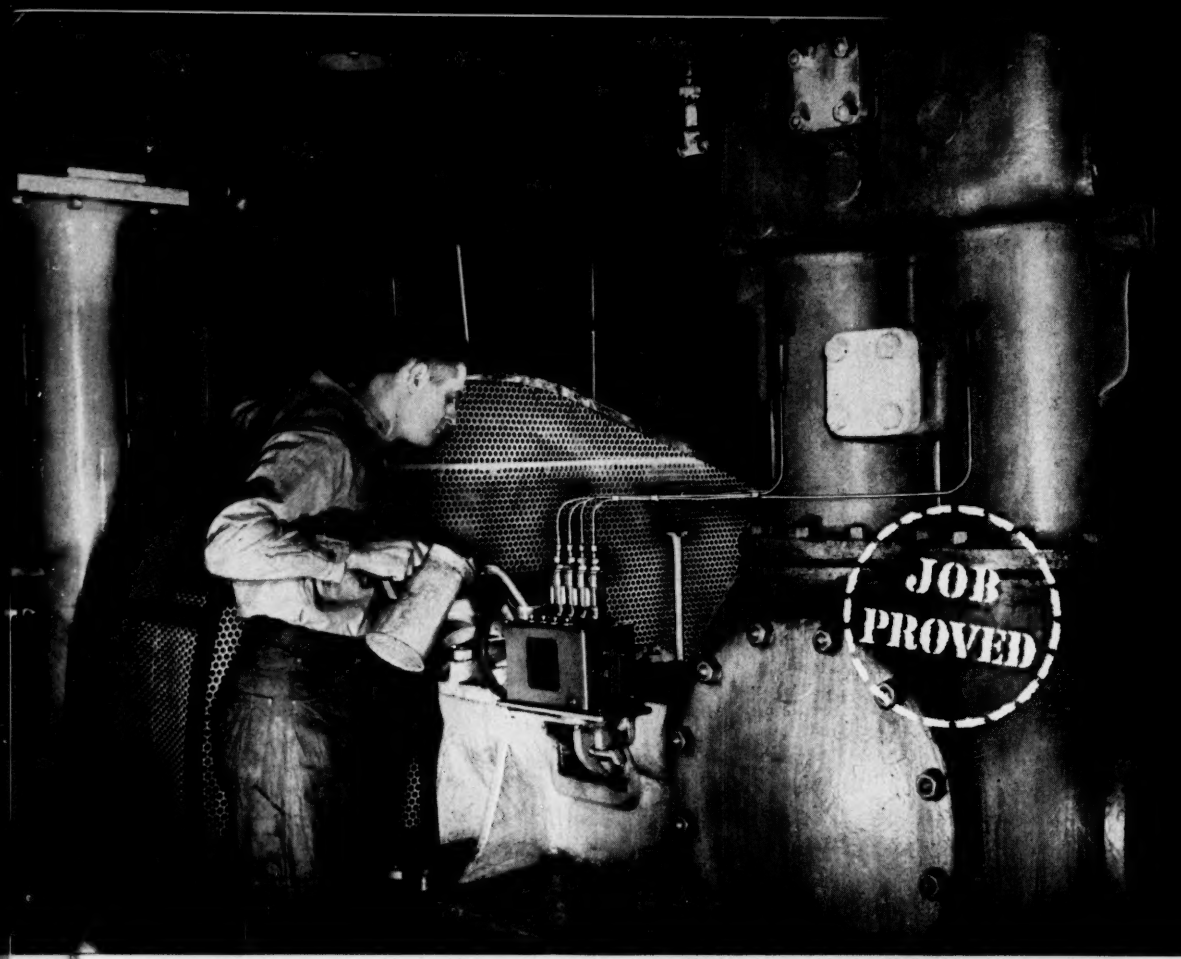
Ceiling Type

A size for every cooler and temperature application. Single and double fan models, for operation with ammonia, Freon or brine. Special Rapid Freeze models with automatic defrost for low temperature storage or processing.

Howe Ammonia Compressors aboard Tuna Clipper



HOWE



SUNISO SUCCEEDS AFTER OTHER OILS FAIL

Keeps Compressors Free of Sludge and Wax; Eliminates Complaints and Costly Maintenance

A firm engaged in constructing and servicing industrial refrigeration equipment had constant trouble with compressor oils. Every oil tried lost viscosity under high operating temperatures. All vaporized and formed sludge in the crankcases. At low temperatures they formed wax which gummed up the strainers and clogged the lines. Customer complaints were numerous and maintenance time costly.

Knowing of the low-wax-point reputation of Suniso Refrigeration Oils, the company called in a Sun Oil representative. He recommended the proper grade of Suniso. With the adoption of this "Job Proved" product, both low-temperature and high-temperature difficulties disappeared. From that time to this, two years later, the manufacturer has never had a single bit of trouble traceable to oil. His service calls are held to the very minimum and his customers are completely satisfied.

Results like this explain why original equipment manufacturers and service organizations rely on Suniso Oils for trouble-free service, under all kinds of operating conditions.

For your free copy of the illustrated booklet "Lubrication of Refrigeration and Air-Conditioning Equipment" write Dept. IR-4.

SUN OIL COMPANY · ***Philadelphia 3, Pa.***
In Canada: Sun Oil Company, Ltd.
Toronto and Montreal

SUNISO REFRIGERATION OILS

"JOB PROVED" THROUGHOUT THE INDUSTRY

SUNOCO®

ICE AND Refrigeration

J. F. NICKERSON, Founder

Published First of Each Month by

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433 N. Waller Ave., Chicago 44, Ill.
Telephone AUstin 7-1303-04-05

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ICE AND REFRIGERATION, Vol. 118, No. 4. Published monthly at 433 N. Waller Ave., Chicago, Ill., U.S.A., by Nickerson & Collins Co. Yearly subscription in the U. S., $3.00 per year; other countries, $4.00. Single copies, 35 cents.

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Entered as second-class matter August 8, 1891, Chicago, Ill., under the Act of March 3, 1879. Additional entry at Beloit, Wis.

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Ice and Refrigeration is indexed regularly by Engineering Index, Inc., and is microfilmed for library use by University Microfilms.

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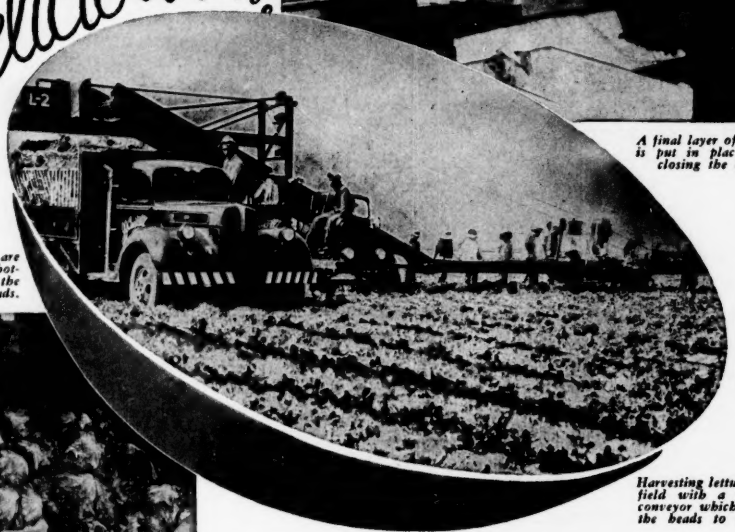
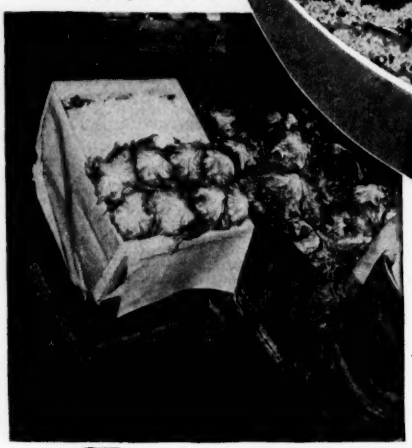
Delivered Delicious...

A final layer of Vogtice is put in place before closing the crate.



Harvesting lettuce in the field with a traveling conveyor which delivers the heads to a truck.

Layers of Vogtice are placed on the crate bottom and between the courses of lettuce heads.

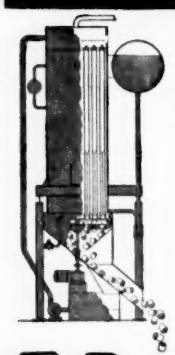


...straight from the Nation's "Salad Bowl"

Head lettuce from the Salinas Valley, California "Salad Bowl" graces the tables in American homes from coast to coast. In the season, shipments will average 135 refrigerator cars daily.

The J. J. Crosetti Packing Co. with headquarters at Watsonville, California is one of the largest growers and packers and operates a battery of four Vogt Automatic Tube-Ice Machines to provide Vogtice for carload shipments. The crates of iced lettuce are loaded in refrigerator cars and then a protective blanket of Vogtice is blown over them to retain freshness and crispness for distant markets.

Vogtice is playing an increasingly important role in the cooling, processing and preservation of foods and beverages. Our new Bulletin TI-3 gives the general information and will be sent upon request.



HOW THE TUBE-ICE MACHINE FUNCTIONS

In making ice, water is pumped to the top of the freezer and flows downward along the inside walls of tubes into a water tank. Refrigerant in shell surrounds tubes and freezes water into cylinders of ice. An automatic timing mechanism operates suitable valves to control all functions of the machine. Ice is freed from the tubes by thawing when the refrigerant is displaced by high pressure warm gas from the compressor.

Employing direct application of the refrigerant, all expense incidental to other systems is eliminated.

Patent Numbers 2,200,424, 2,239,234, 2,396,308, 2,444,514, 2,453,140.

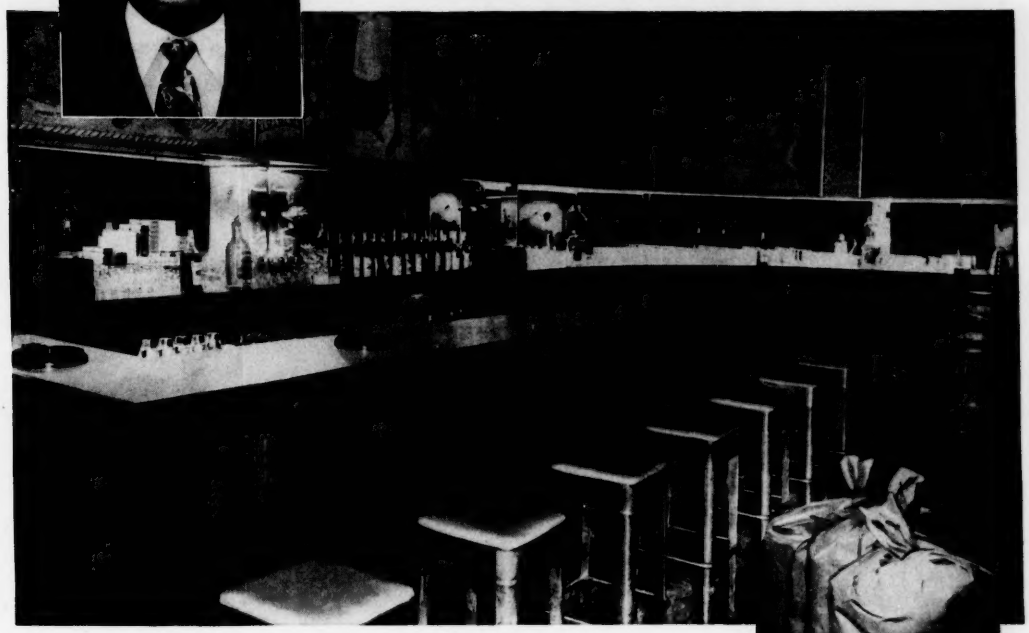
HENRY VOGT MACHINE CO., LOUISVILLE 10, KY.

BRANCH OFFICES: NEW YORK • PHILADELPHIA
CLEVELAND • CHICAGO • ST. LOUIS • DALLAS

Vogt *Automatic* TUBE-ICE MACHINE

"For absolute purity we use Packaged Processed Ice"

SAYS BERNARD GARFINKEL, MANAGER OPERA BUFFET, CIVIC OPERA BLDG., CHICAGO, ILL.



The Opera Buffet of the Chicago Civic Opera Building is one of Chicago's finest after-the-show refreshment spots—a rendezvous for celebrities.

Try This 3-Month Test To Build Processed Ice Sales

YES, the one-trip paper ice bag is a proved sales builder for processed ice. Use it for three months... and you'll agree. It's just what your customers—and those you'd like to call your customers—have been seeking.

The Union one-trip paper ice bag is completely sanitary. No dirt can get in, no ice can spill out! It's so easy to use that your customers actually use more ice than when it's delivered in old-fashioned re-usable containers.

One-trip paper bags speed up handling on the platform, in loading and at the delivery point. The sturdy wet-strength paper—two layers thick—retards melting. To cut your costs, to please your customers and to build your sales, switch to Union one-trip paper ice bags, and *do it now*. Write for free samples.

Wet-Strength Paper Ice Bags have tremendous strength even when soaking wet... thanks to a water repellent resin that binds the fibres of the paper firmly together.

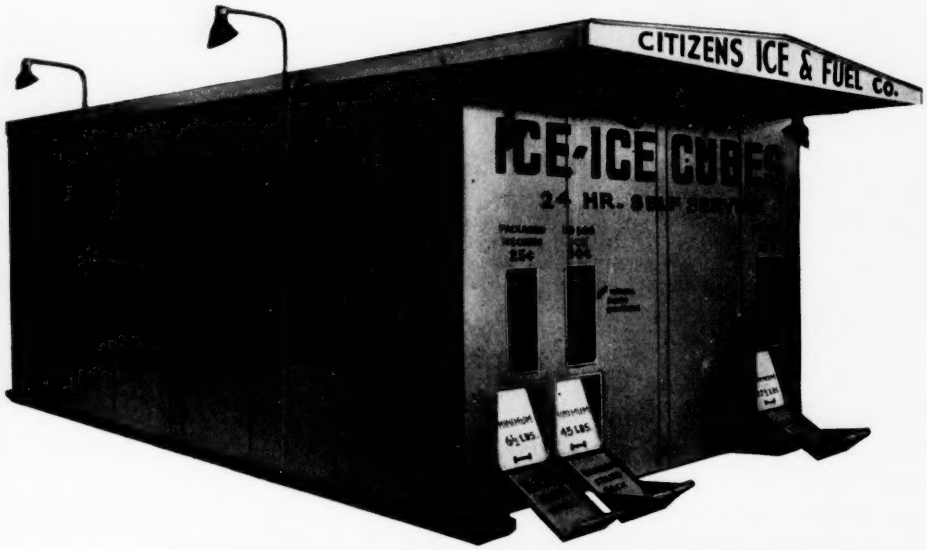
ONE TRIP

UNION Paper Ice Bags

A product of the UNION BAG & PAPER CORPORATION • Woolworth Bldg., New York 7, N. Y.

Bags of Kraft, Transparent Films, Waxed Paper, Glassine, Laminates

Extra Ice Sales . . . Extra Profits
Automatically Yours!



with POLAR ICE VENDING EQUIPMENT*

- **COMPLETE STATIONS WITH VENDORS**
- **VENDORS FOR YOUR PRESENT STORAGE ROOM**

Polar Vendors and Stations are silent salesmen that are on duty day and night making cash sales for you! Your customers will appreciate the fact that they can serve themselves in ten seconds from conveniently located Polar units which provide automatic ice service 24 hours a day, every day of the year.

Besides collecting for every nickel's worth of ice you sell, Polar equipment will also keep a permanent record of sales made for each vendor is equipped with an automatic counter.

Polar Ice Stations are sturdily built of heavy gauge aluminum and insulated with 6½" of high density Fiberglas, completely vaporsealed. Surplus power refrigeration units further insure economical operation, and zero temperatures are guaranteed at 95° temperature difference.

You can depend on Polar Equipment to boost your sales and profits. We invite you to investigate now the profit possibilities of merchandising ice the Polar way. With Polar equipment you'll increase your volume of business and at the same time LOWER YOUR DISTRIBUTION COSTS!

****Selected by the planning board for installation in the model village at Oak Ridge, Tennessee.***

INSTALL POLAR EQUIPMENT—NOW! SATISFACTION GUARANTEED

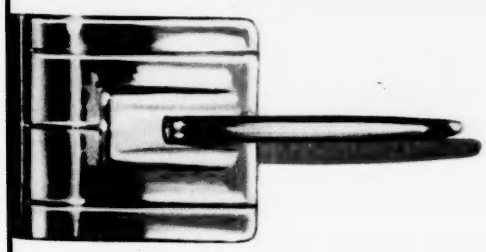
WRITE TODAY FOR COMPLETE INFORMATION

REFRIGERATION ENGINEERING COMPANY

211 Foshay Tower, • Minneapolis 2, Minnesota

Open the door to ice refrigeration rental and sales with *Vitalaire*

in '50



Yes . . . and Vitalaire is furnishing the perfect door-opener for you! A brand new model with outstanding features of functional design that will stir up refrigerator and ice business for you this season. Complete details in the next issue of this publication!

ICE COOLING APPLIANCE CORPORATION
Morrison, Ill.

this is only the *Beginning*

This stamp on a Vilter invoice is just the start of a long relationship

After the sale has been closed, the refrigeration equipment installed, and the invoice paid, then the Vilter organization *really begins* to get to know its customers. The actual *use* of the equipment and its satisfactory, economical operation are as important to Vilter as they are to you, the user.

The expert attention of your Vilter Representative or Distributor and his ability to judge satisfactory operation and to forestall difficulties are of almost equal importance with the in-built quality of Vilter equipment in assuring you the longer life, the greater freedom from trouble you have a right to expect.

YOU'RE AHEAD WITH VILTER

Because every major part of Vilter refrigeration equipment is made in the Vilter plant, because Vilter's interest goes with the equipment to the job and stays there, you can be certain of greater satisfaction from Vilter equipment. Contact your Vilter representative and ask him to show you how you can be sure of continued savings when your choice for refrigeration is Vilter.

Vilter

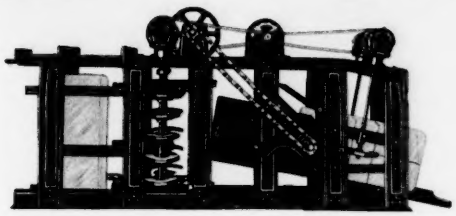
REFRIGERATION and AIR CONDITIONING

THE VILTER MANUFACTURING COMPANY
MILWAUKEE 7, WISCONSIN

Ammonia and Freon Compressors • Pak Icers • Evaporative and Shell and Tube Condensers • Pipe Coils • Valves and Fittings

A GREAT NAME *in* ICE SCORING MACHINES

The OLD RELIABLE PERFECTIONS have been known for their rugged dependability and long life for more than 28 years.

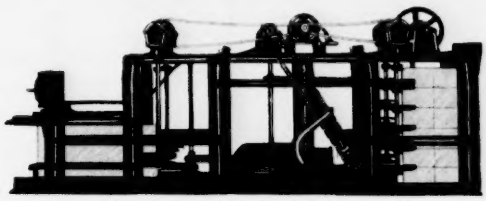


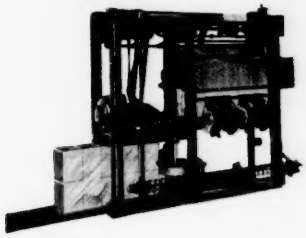
PERFECTION REGULAR

The Perfection REGULAR receives the ice block standing on end, scoring it crosswise first. Then the block enters the tilting cage which turns the block down and it slides by gravity through another set of saws that score it lengthwise. In one operation the REGULAR will score the blocks into any size pieces desired. This machine in 300 and 400 pound size, is 31 inches wide with saw guards in place, or 26 inches wide with saw guards removed. Capacity is six blocks per minute or 360 blocks per hour.

PERFECTION SPECIAL

The PERFECTION SPECIAL receives ice blocks on edge, scores them lengthwise first. Then heads up the blocks, scores them crosswise and discharges them standing on end. This is a combined heading and scoring machine and scores the blocks into any size pieces desired in one complete operation. Capacity is 4½ blocks per minute or 270 blocks per hour.





PERFECTION "MILLER"

The MILLER machine receives the ice block lengthwise on edge. It is first lifted up and scored crosswise, passing the same saws again on the way down. It is then (without leaving the machine) automatically conveyed through the saws which score it lengthwise. Only one operation is necessary for complete scoring. Block is put through machine only once. The capacity is six blocks per minute, or with 300 lb. blocks, over 50 tons per hour. With 400 lb. blocks this output is increased to 65 tons per hour.

PERFECTION ICE CHUTE

A Perfection Ice Chute offers progressive ice merchandisers the surest way to give such service. Just pull a lever, out comes a cake of ice. The job is done in one-tenth of the time required under old methods. Customers are pleased. . . . Costly refrigeration is saved. . . . Business is increased. . . . Profits multiplied. The ice chute is built in two types; the straight chute, and the parallel.

Repair parts for all current models available for immediate shipments. Write for more information, or phone Fort Worth 3-1258.

Martocello QUALITY

OUR PRODUCTS ARE MANUFACTURED FROM THE FINEST MATERIALS AND DESIGNED TO GIVE LONGER AND MORE EFFICIENT OPERATION

compare their **QUALITY** *and* **WORKMANSHIP** *with all others and satisfy yourself that they are the very best*

COMPLETE AIR AGITATION SYSTEMS AND ICE PLANTS

If your Ice Plant is closed for long periods during the off season or winter months, remove as much of the Raw Water Equipment from the Tank as possible and store it away in a dry place. The parts put in storage may include the Drop Tubes with Ferrules and Rubber and Gum Tubings.

When starting operation again, carefully go over the High or Low Pressure Nozzles, cleaning the orifices with a Pin Vise and Drill of correct size.

Any corrosion occurring in the Pipe Lines, etc., during long shut-downs may show up in the form of iron oxide stain in the ice upon starting up the plant. This will usually disappear after only a few days' operation and is not a cause for anxiety.

At least twice a year wash and scrub all Covers, and let them dry thoroughly before replacing them on the Freezing Tank or Baskets. This operation can be done conveniently during the slack seasons. Dirty Covers quite often cause dirty ice; therefore, keep them clean.

REPRESENTED ON THE WEST COAST BY WESTERN ICE EQUIPMENT CO., 420 MARKET ST., SAN FRANCISCO, CALIF.

JOS. A. MARTOCELLO & CO.

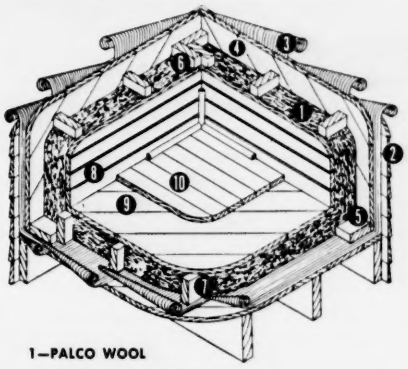
229-231 North 13th Street **Philadelphia, 7, Pa.**

INSTALLATION FILE NO. 1004

How to get maximum efficiency with PALCO INSULATION WOOL

Recommended

COLD STORAGE CONSTRUCTION FOR FRAME BUILDING—Warm side only should be vapor-proofed. This allows free breathing to cold side to keep insulation and framing members dry. Vapor-proof paper should be applied over entire sub floor, under wall plates, and outside the sheathing of exterior walls and ceiling. 4-inch laps should be cemented with asphalt emulsion. A double layer should be installed in all corners to prevent possible vapor moisture leaks. Exterior may be either siding or cement plaster, with roof optional. High efficiency of Palco Wool, with the thermal conductivity of only .255 B.T.U., insures uniform low temperatures at minimum operating costs.



1—PALCO WOOL
2—Siding or cement plaster
3—Vapor-proof paper with cement laps
4—Wall sheathing
5—Plate
6—Note corner stud arrangement
7—Redwood or cypress sleepers
8—Redwood lining pattern No. 209
9—Sub floor
10—Finish floor

Applied

SHIPPERS DEVELOPMENT COMPANY, SALINAS, CALIFORNIA, where seven million dollar crop is processed, packed and shipped annually. Flameproofed PALCO WOOL is particularly suited to all cold storage applications because it is moisture resistant, odor proof, non settling. For lifetime peak efficiency, specify PALCO WOOL.

FROM NATURE'S INSULATION — FLAMEPROOFED — AGE-OLD REDWOOD BARK

Mail attached coupon today for more detailed information.

THE PACIFIC LUMBER COMPANY
100 BUSH STREET, SAN FRANCISCO 4, CALIFORNIA
5225 WILSHIRE BLVD., LOS ANGELES 36, CALIFORNIA
35 EAST WACKER DRIVE, CHICAGO 1, ILLINOIS

THE PACIFIC LUMBER COMPANY
100 BUSH STREET
SAN FRANCISCO 4, CALIFORNIA

Please send me without obligation:

☐ PALCO WOOL COLD STORAGE MANUAL
☐ LOCKER PLANT PLAN AND CONSTRUCTION MANUAL

Name_____
Title_____
Company_____
Street_____
City_____ Zone____ State_____

004-IR

YOU WOULDN'T BUY A WATCH THIS WAY...

Why buy lubrication in bits and pieces?

Correct Lubrication is a lot more than just drops of oil and dabs of grease.

It's knowledge of your machines and their exact lubrication needs. It's the *right* lubricant, applied the *right* way. It's engineering service that helps you create one unified lubrication program throughout your plant.

With Socony-Vacuum, you get...

1. A study of all your machine lubrication requirements
2. Recommendations of the right lubricants.
3. Engineering counsel on special problems.
4. Help on reclamation, storage, handling of lubricants.
5. Continued cooperation with Plant Personnel.
6. Reports on progress and results.

Call your Socony-Vacuum Representative *today!* Get this program started in *your* plant...to assure more continuous production, lower maintenance costs.

SOCONY-VACUUM

Lubricants

SOCONY-VACUUM

Correct Lubrication

WORLD'S GREATEST LUBRICATION KNOWLEDGE AND ENGINEERING SERVICE

SOCONY-VACUUM OIL COMPANY, INC., and Affiliates: MAGNOLIA PETROLEUM COMPANY, GENERAL PETROLEUM CORPORATION

In the Spotlight

THIS MONTH'S COVER shows the new mechanical car icer for refrigerator cars. Descriptive article on page 15.

A NEW market for ice has been opened through the use of sized ice for dressed poultry. A million tons of ice per year, it is estimated, will be used in this market. An advertising program launched by Swift & Co., advocates liberal use of processed ice for both processing and retail display of poultry. See page 22.

A SNOW-MAKING machine for winter sports resorts is being developed at Milford, Conn., has passed preliminary tests, and will be tried out during the next few weeks at the Mohawk Ski Area, Cornwall, Conn. The machine forces water and compressed air through a nozzle forming a supercooled spray which, it is said, turns into soft, white flakes that fall gently to the ground.

FEW of the large natural ice storages remain in service at the present time. Now another large natural ice operation is to be converted at Laramie, Wyoming. The Pacific Fruit Express Co., has announced that it will substitute an ice manufacturing plant to handle the extensive car-icing operations at that location.

GLASS lining has long been used to provide an impervious surface inside tanks. Now underground piping is being covered with glass. The material is a felt like glass product which is impregnated with asphalt as it it wrapped on the pipe. Principal application has been in the field of gas and oil transmission lines but it is expected that use will spread to much of the steel pipe run underground.

TO DETERMINE profit possibilities and know how to meet operating problems, a practical method of cost accounting is essential. Too often, fundamental facts are overlooked or avoided and prices are based upon guesswork or incompleted facts. See page 27.

USE OF a single strand of wire around the middle of the standard LA crate reduced breakage in railroad shipments of lettuce by almost half in preliminary tests made by the Western Growers Association, in cooperation with the U. S. Department of Agriculture.

SELLING ICE during the winter months may not be as visionary as it would have seemed a few years ago. Ice distributors are learning that people use cold beverages and foods that need ice, just as they eat ice cream, every month in the year.

COMMENTING on the Natural Cooler Storage installed as a war emergency in a limestone cave at Atchison, Kans., a U. S. Department of Agriculture official explained why the government was not considering the termination of its lease, but added "The Commodity Credit Corp. is not looking around for any more caves . . . and it probably wouldn't make such an investment today."

A NEW mechanized car icer has been developed which increases the speed of car icing, reduces accident hazards, cuts the cost of ice dock maintenance and provides many other advantages. See page 15.

HOW does the Production and Marketing Administration of the U. S. Dept. of Agriculture affect the contacts of refrigerated warehousemen with their government? See page 51.

WHILE receipts of frozen food lockers the country over are down, the increased income is more than offset by increased operating cost, says a report from the U. S. Department of Agriculture.

ICE VENDORS—A middle west ice company now has 23 ice vending stations in operation and expects to have 50 before the end of the year.

SURVEYS have shown that automatic ice vending stations will sell ice to people who have not heretofore been regular ice customers. It also shows where stations should be located, and how they should be advertised. See page 19.

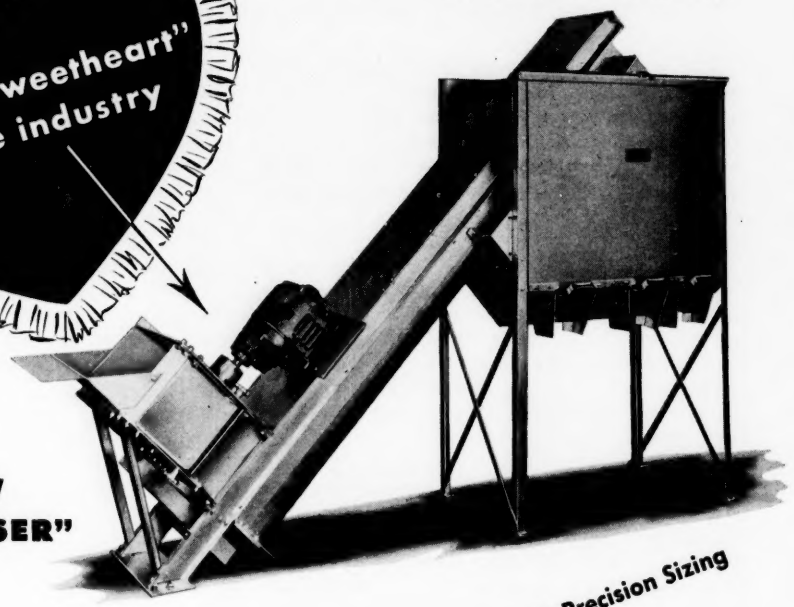
A MICHIGAN ice company advises people who want ice that they can get it 24 hours a day, 7 days a week; and this does not involve keeping the platform or any sales station open. All the customer does is to telephone the order to one of the taxicab companies. A driver will fill the order through a vending station and deliver the ice at the cost of the ice plus taxi fare.

Next Month

ICE PRICES established by leading ice producers in all sections of the country will be listed in the May issue of Ice and Refrigeration. This service which has proven valuable to all ice producers for many years, will be still more useful this year through the addition of information on sales of ice through automatic ice vending stations.

the New "Sweetheart" of the ice industry

"Economiser"—Fixed Screen, perforated plate. Only two shafts. Grease-sealed bearings.



...the G-W "ECONOMISER"

When the "Economiser" came out at the National Ice Show in New York, it walked off with plenty of hearts. And with good reason. For, here, Ice Manufacturers can at last get a low cost, highly efficient sizer, compact in design and requiring a minimum of headroom. Measuring 7'6" high, 2'4" wide and 10'9" long, this machine takes block ice, breaks and separates it into three grades and delivers it to bagging hoppers at a rate of 200 pounds per minute. All steel parts in contact with the ice are galvanized.

Its cost is surprisingly low and because of the simplicity of the "Economiser", maintenance costs are cut almost to the point of non existence. As in the case with all G-W ice machines, Gifford-Wood has built the "Economiser" from highest quality materials and with the care that's a mark of true metalworking craftsmanship.

...Profitable Precision Sizing

...Less Breakage

...Fewer Fines

S-16-EB Ice Sizer—Combines G-W #620 precision breaker with integral elevator unit, 30" D rotary screen and bagging bins. Maximum height—8' 5⅞".

FOR LARGE CAPACITY SIZING GIFFORD-WOOD S-16 SERIES OF ICE SIZERS

GIFFORD-WOOD CO.

Since 1814

HUDSON • N. Y.

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Pacific Coast Representative: WESTERN ICE EQUIPMENT COMPANY 420 Market St., San Francisco 11, Calif.

UP-ENDER • CUBER • SIZER • SCORER • TIERING MACHINE • CONVEYOR • BREAKER

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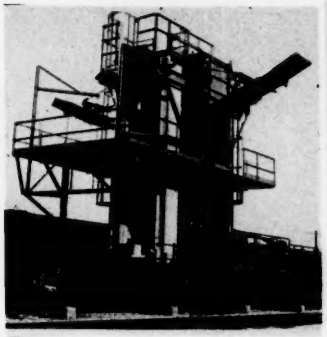
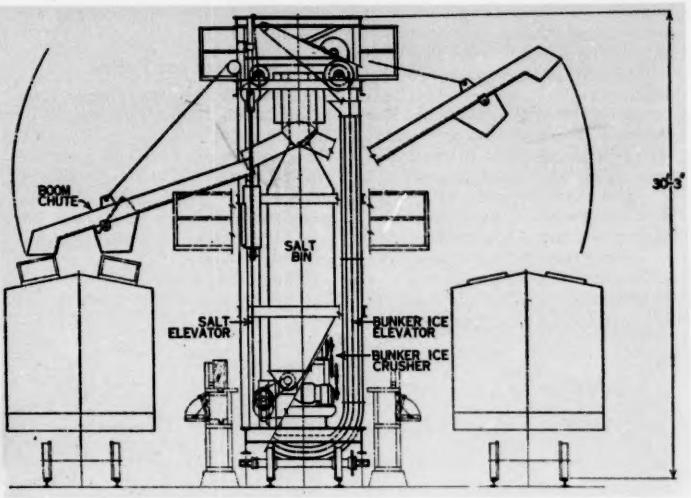




Mechanized Car Icer Speeds

Perishable Food Transportation

SAFETY, speed, economy, and improved service have long been the objectives of those responsible for the perishable freight transportation. A considerable advance in the attainment of these objectives has been made by the introduction of machines which take ice blocks from a conveyor, break it into desired size and discharge the ice into car bunkers. The whole operation is controlled by the operator who runs the machine. At the same time he can add salt in predetermined amounts, stop or start the supply ice conveyor, and give directions to co-workers in the plant or storage.

Speed Icing Operation

That these machines add speed to the car-icing operation and thus to the transportation of perishable foods is evident. Other advantages have been demonstrated in the operation. Accident hazards have been reduced because the pace of manual labor has been less hurried while the machine speeds the operation. Large ice supplies do not need to be concentrated on the dock to await arrival of the train. Large icing crews do not need to be assembled and wait for trains that are delayed. Ice dock maintenance is considerably reduced, and other similar benefits have accrued.

The news that car icing operations had been mechanized created great interest among railroads, car lines and ice manufacturers since the first machine was placed in operation some 18 months ago. From time to time photos of certain of the machines have been published, especially in the railroad field but also in others.

The new car icing equipment has been developed by the Link-Belt Co. in cooperation with The Railways Ice Co. Now they have established the correctness of the designs and satisfactory performance of the equipment. Details of the machines which have just been released are combined with other information in this article to give a well-rounded story of this very significant car icing development.

Photos and Illustrations from Railways Ice Co. and Link-Belt Co.

There are two types of machines. One runs on top of the icing dock and is supplied by the usual type of dock ice conveyor. The other requires no icing platform. It is supplied by an ice conveyor beside the tracks on which the icer runs. **(See cover.)** It is a self-propelled machine traveling on rails approximately the same elevation as the refrigerator car tracks; and is designed to crush blocks of ice and do bunker icing, salting and top-icing of cars on two lines of track (one line on each side), rendering a complete icing service under full control of the operator on the machine.

Complete Control

The travel speed along railroad track is 300 ft. per minute. When desired, the machine can be equipped with an auxiliary platform at an elevation near the top of the refrigerator cars. This platform can be used to carry persons from one refrigerator car to the next when flat cars or tank cars are between the refrigerator cars and, when equipped with revolving jib hoists, provides a convenient method of placing, removing and storing heaters. A drawing and photo of this machine are shown above.

Control equipment can be arranged so that operator on the ma-

chine can start and stop all conveyors bringing ice blocks from storage to the machine. Voice communication can be provided between the operator, the storage house and other stations.

Between the machine and one line of cars is the dock conveyor which brings block ice from storage, and from which the blocks are removed by a power-operated retractable plow to a reversing feeder-conveyor for carrying the blocks to either the bunker ice crusher or the machine's conventional top icing crusher-slinger, as desired.

continuously and uniformly. Machines of greater output rating are also made.

Size of Ice Varied

When only the two primary rolls of three-roll crusher are operated, the size of ice may be varied so that the greater percentage of the output will be any size chunks between 10 and 40 lbs. When the third roll is engaged, a smaller size of crushed ice will be produced, suitable for meat car icing with salt.

Salt, carried in a 15,000 lb. capacity bin on the machine, is raised by a

done or, when required, can also be equipped to do top icing.

By means of an inclined pickup conveyor the machine receives ice blocks, standing on edge or lying on their flat side, from the dock conveyor. Only one pickup conveyor is applied when ice is to be received from only one direction, but the machine can be equipped with two pickup conveyors when required to receive ice from two directions as docks supplied with ice blocks from both ends or from some intermediate point as for operations requiring reversing dock conveyors.

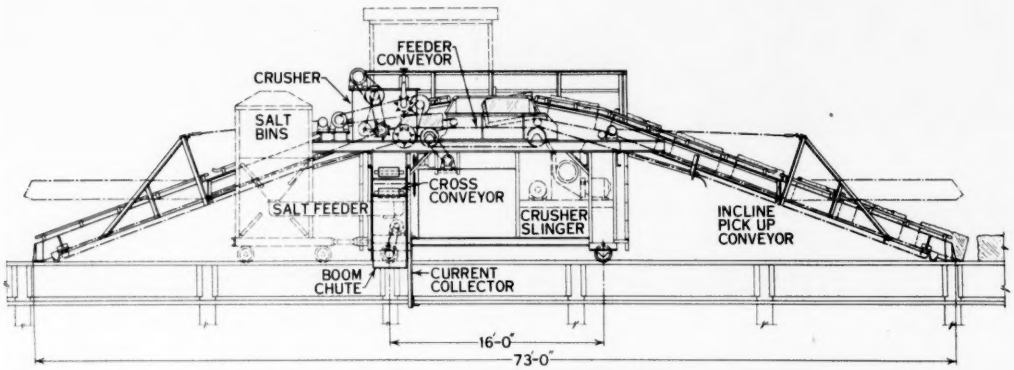


Fig. 1—The complete dock type machine is impressive in features and performance. Pick up conveyors take ice up from either end and break as much as 40 blocks a minute to the desired size. Salt from the bin is fed with the ice in the amount set by the operator. Note how weight of the machine is distributed so that structural stress is minimized. Only two wheels are in one bay of the platform at one time.

For top icing, the ice blocks are carried by the feeder-conveyor into a crusher-slinger unit for reduction to fine particles, which are delivered through the side doors of refrigerator cars by the usual method of an impeller and a flexible tube. The handling capacity of this crusher-slinger is nine 300 lb. or seven 400 lb. blocks per minute, equivalent to 80 tons an hour, but larger units for greater output are available.

For bunker icing, the ice blocks are carried by the feeder conveyor into the bunker ice crusher, which can quickly be adjusted to produce various sizes of crushed ice. An enclosed bucket elevator raises the crushed ice into the boom chutes for loading the bunker hatches.

The machine operator controls the raising and lowering of the boom chutes and the opening and closing of a gate in each chute for distribution of ice to the near or far hatch.

The bunker-icing capacity is at the rate of eighteen 300 lb. blocks or thirteen 400 lb. blocks per minute, equivalent to 160 tons per hour, when fed separate enclosed bucket elevator which measures the required quantity and discharges it in increments of 25 lbs. per second into the boom chutes, simultaneously with the crushed ice.

Dock Type Car Icer

The new dock type car icer is a self-propelled machine traveling at 300 ft. per minute on rails of a high-type icing dock and servicing, in a minimum of time, a line of refrigerator cars on each side of the dock, with bunker ice and salt or top ice. All movements of the machine and the starting and stopping of the dock ice conveyor are under control of one operator on the machine. (See figure I.) Voice communication can be provided between the operator, the storage house and other stations.

Since some icing docks already have top icing equipment and at others it may be desired to do top icing independently of bunker icing, this machine is designed so that bunker icing and/or bunker salting may be

The inclined pickup conveyors elevate the ice blocks to a chute from which they slide to a feeder conveyor. When the machine is equipped for top icing, the feeder conveyor is made reversing to carry the blocks of ice to the top ice crusher-slinger or to the bunker ice crusher, as may be desired. (See Figure 2.)

For top icing, the ice blocks are reduced to fine particles by the machine's top ice crusher-slinger at the rate of six 300 lb. blocks per minute (60 tons per hour) and delivered into refrigerator cars on either side of dock by an impeller and flexible hose. Ice is diverted to the side desired by means of a quickly operated valve at the impeller. Larger crusher-slinger units for greater output are available.

For bunker icing, the ice blocks are taken from the feeder conveyor and crushed to the desired size by a three-roll adjustable crusher at the rate of forty 300 lb. blocks per minute (360 tons per hour). The machine can also be equipped with speeds and motors proportioned for any smaller output.

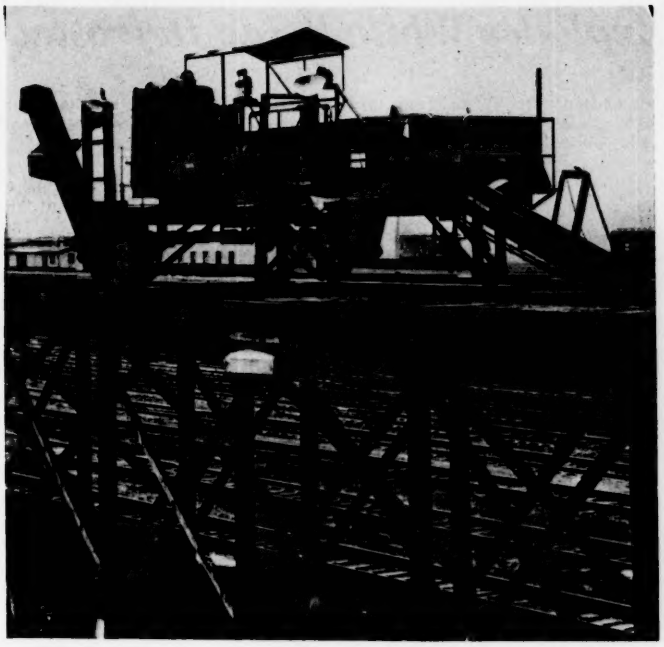


Fig. 2—The dock type car icer rides broad gauge rails in the platform structure. The machine shown has a single pick up conveyor on the right. Pick up from either end and other features are shown in the line drawing, which also shows the top ice equipment.

When operating only the two primary rolls of the crusher, the size of ice may be varied so that the greater percentage of the output will be any size chunks desired between 10 lbs. and 40 lbs. by adjusting the position of one of the rolls. When the third roll of the crusher is engaged, a smaller size of crushed ice will be produced for meat car icing.

Flexible

The crushed ice falls into a distributing conveyor which is made reversing to permit discharge at either side of the dock into boom chutes which direct it to the bunker hatches.

Blocks of ice can be accumulated on the inclined pickup conveyors, and on the crusher feeder conveyor, and crushed ice can be held in the distributing conveyor while the machine travels from bunker to bunker.

Salt is carried in two bins supported by a trailer which travels on the same rails as the machine. From each bin, salt is taken to one of the boom chutes by a conveyor which can be set to deliver the required quantity and is controlled by the machine's operator. The size of salt bins and rate of salt feed can be arranged to suit individual requirements.

Manual icing methods have made some remarkable records in speed of car icing work. To do this however, the men in the crews have to be rather well trained and must work at top speed. In recent years on some operations, it has not been possible to train the crews as fully as the car icing organizations desired. In these and some other cases the frequency of accidents and also the severity of injuries has been a problem. This problem the new car icing machines are well able to solve.

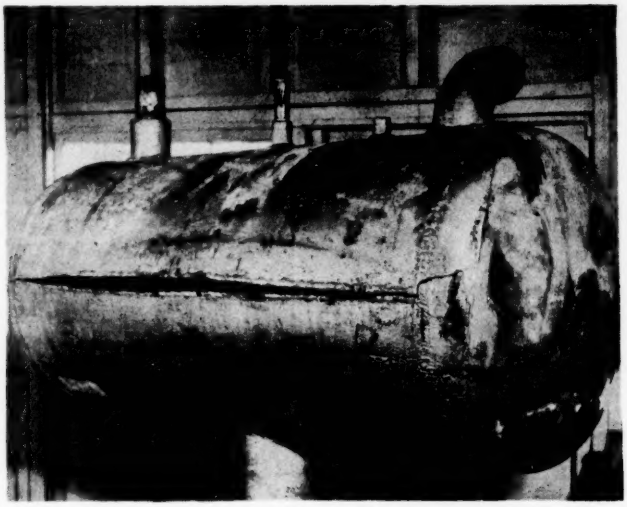
Fig. 3—The car icer at work. At top, the dock conveyor takes a steady stream of ice blocks to the machine in the background. Note the absence of accumulated ice and hand equipment on the platform. This fact is also evident in the next photo which shows the automatic pick up of the ice blocks by the car icer's incline conveyor.

Next the ice blocks are tipped on side and enter the ice breaker. The drums are adjustable so that the desired size of ice is discharged to the cross conveyor.

Finally the prepared ice is discharged into the car bunker in a high volume stream. Note: The machine shown is one of the earlier models. Later models have an improved chute and other features, — see other illustrations.

Ammonia Tank Explodes While Being Defrosted

FROZEN foods valued at $80,000 were placed in danger of contamination by ammonia when an explosion occurred in the "holding room" of a refrigerated warehouse, according to an article in a recent issue of "The Locomotive," company publication of The Hartford Steam Boiler and Insurance Co. A tank containing liquid ammonia exploded and its contents were blown into the room. The tank served as an ammonia accumulator or surge drum and was connected in the line leading to cooling coils used to maintain subzero temperatures in the room.



The above picture shows tear in ammonia accumulator or surge drum which resulted from an explosion due to overpressure. There was no relief valve on the vessel. When it exploded 700 pounds of ammonia were blown into a room containing $80,000 worth of frozen foods. The tank was part of the refrigerating system of a large refrigerated warehouse.

One of the operators reported that the "holding room" coils were being defrosted when the accident occurred. He had shut off the valves in the liquid and suction lines and had turned on the cold water spray provided for the purpose of melting the frost from the coils. After he had checked the water flow of the spray equipment, he left the room and had just closed the door when it was blasted open by the explosion.

The accumulator shell ripped open for the entire length of its welded longitudinal seam, and the tear extended several inches into the flanges of both heads of the vessel. The contents of the accumulator, about 700 lbs. of ammonia, enveloped the food containers stacked 10 ft. high in the "holding room" and endangered the entire $80,000 worth or products. Salvage operations were put into effect immediately and most of the food was saved, but the loss amounted to $15,000 including the cost of salvage work.

The cause of the explosion was overpressure. As a result of the warmth of the defrosting spray at 60 F., the liquid in the cooling coils boiled and pressure built up in the accumulator. There was no relief valve on the shell, which had been isolated from relief valves in other parts of the system when the valves in the liquid and suction lines were closed.

Accidents to refrigerating systems are liable to occur during the defrosting process. Such accidents range from explosions to cases where a pipe is broken while frost is being knocked or chipped from the coils with a hammer or other tool. Accidents that involve an explosion are more spectacular than those in which a pipe is broken, but the amount of the total loss can be large in either case. The principal damage is usually that caused by contamination of stored goods by the escaping ammonia, or spoilage due to lack of refrigeration, and products valued at thousands of dollars may be lost as the result of the breaking of a 'few dollars' worth of piping.

A.S.T.M. Standards on Industrial Water

A NEW compilation, prepared by A.S.T.M. Committee D-19 on industrial water, brings together in convenient form the various A.S.T.M. standard methods of sampling, analysis, and testing of industrial water for use of all those interested in this field. These methods have been developed particularly for the examination of water employed industrially in the generation of steam or for process or cooling purposes, and for the examination of deposits formed from such waters.

The publication includes twenty-six methods which cover sampling, analysis, corrosivity tests, methods of reporting and general testing methods. A list of A.S.T.M. symposiums and technical papers on industrial water is also included.

Copies of this 142-page compilation, paper cover, can be purchased from American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa.

Ice Vending Station at Irvington Ice Company, Indianapolis, Ind., would Score High on Visibility and Convenient Parking Facilities.

Make It EASY to BUY ICE

By Donald Scott
S & S Vending Machine Co.
San Jose, Calif.

What are the best locations for ice vending stations?

Here are some answers based upon a scientific survey to evaluate location factors.

John Aberle, M.B.A., and Edward W. Condiff, M.B.A., San Jose State College, California, conducted this first survey under the sponsorship of a leading manufacturer of ice vending depots. A second survey will be conducted this Spring to determine:

(1) Impulse buying effect.
(2) Home uses of Ice.
(3) Potential Processed Ice Sales.
(4) Efforts and Effects to Increase Processed Ice Sales.
(5) Customer Demands and Buying Habits.

Photos Courtesy S & S Vending Mach. Co.

DETERMINING profitable locations for automatic ice vending stations is a matter of evaluating certain known factors which can be predetermined by a scientifically conducted survey. Some interesting facts were uncovered in such a survey conducted by a pioneer manufacturer of ice vending depots, in cooperation with a well-known West Coast university.

Supervision of the survey and the analysis of the results were under the direction of John Aberle, M.B.A., and Edward W. Condiff, M.B.A., members of the faculty of Stanford University at the time the survey was conducted, and now on the faculty of the San Jose State College, San Jose, Calif.

Ten sites in five West Coast cities were selected for the study. In each city, stations with the highest and lowest sales, based on 1949 tonnage figures were surveyed.

The analysis of the study emphasized that six basic existing conditions were found to be of major importance in station locations, which constituted the final findings.

1. The Street

Contrary to basic principal of site location, the type of street apparently has no significance insofar as ice vending depots are concerned.

In the survey, streets were classified as boulevard, through street, cross street and side street. This classification was not based upon volume of traffic, but rather upon the importance of the street as a traffic artery, as measured by length and points of destination.

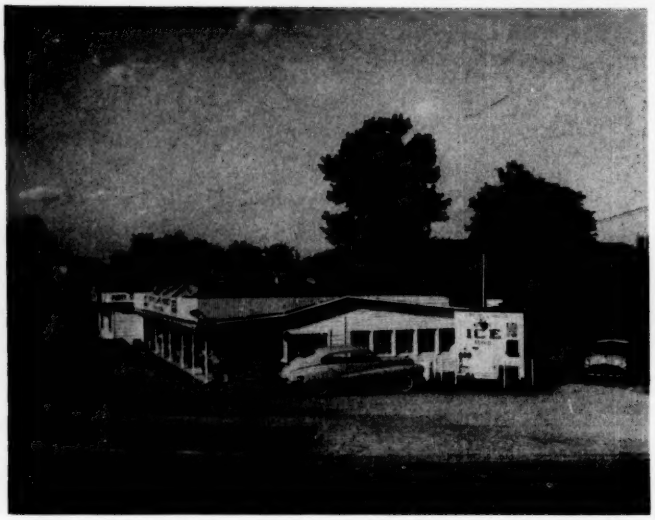
Three of the best locations were on cross streets, the remaining two on boulevards. Three of the poorest locations were on through streets and the remaining two were on cross streets.

2. Volume and Composition of Traffic

Width of the street was found to have significance. All of the poor locations were on two-way streets, while two of the best locations were on three and four-lane cross streets. A minimum requirement, therefore, is sufficient width for double parking.

Location of affinitive businesses, such as liquor stores, grocery stores, cafes, and the like, within a short distance of the depot, has no apparent effect upon the success of the location.

Automobile traffic count is one of



Easy Access from a Well-travelled Thoroughfare and Good Visibility Makes an Ideal Location for a City Ice & Fuel Co., Dayton, Ohio, Vending Station.

the most significant location factors for ice vending stations. At all of the best locations, heaviest traffic count occurred between 4:00 and 6:00 p.m.

The only good location with smaller traffic count was in an outlying area where the vending station was across the street from the ice plant, and the only vending station within a five mile radius.

The composition of the traffic had little or no significance. At all of the locations there was a preponderance of local and localized commuting traffic. Industrial traffic was fairly heavy at one of the good and one of the poorest locations.

Good location traffic count (for 5 minutes) averaged 95 to 111 automobiles. Poor location traffic count (for 5 minutes) averaged 17 to 57 automobiles.

3. Density and Composition of Population

Locations in areas with a high proportion of foreign born were constantly better than locations in areas composed predominantly of native born citizens.

Occupation of the population served by the vending depots, is an important factor. All of the best locations were in areas which had a predominantly laboring population.

Density of population in the immediate area apparently has very little significance as a location factor. Although three of the good locations were in densely populated residential areas, two were in partially industrial areas with sparse residential population. The poor locations were all in residential areas; two with dense population and three with medium density of population.

In Locating Your Ice Vending Depot Observe These Basic Rules

1. Select streets which are good traffic arteries, three or four-lane if possible, or with at least sufficient width for temporary parking facilities.

2. Locate on streets having traffic count of 95 or more automobiles every five minutes. Unless area is rural and uncongested, in which case a count of 60 automobiles in five minutes may be acceptable.

3. Don't overlook localities with heavy foreign-born population.

4. Locate station where it is readily visible, but avoid heavily travelled "race track" intersections. However, if sandwiched between existing structures, by all means use sufficient illumination and color to identify location in customers' minds.

5. Locate for easy servicing, making certain that each station serves a different traffic artery, and is situated for right-hand "going home" traffic.

6. Consider always the customer's convenience. Make it easy for him to buy ice.

4. Accessibility

A number of factors were considered in determining the relationship of accessibility to location. From a statistical standpoint the specific location of a vending machine, in a block, appeared to be of little significance. Three of the good locations were inside, while two were on corners. A similar pattern was found for the poorest locations.

It was concluded that while a corner location might be seen from more directions, the constant intersectional traffic flow made it somewhat hazardous to stop a vehicle unless adequate off-street parking was available. In contrast, inside locations do not appear to need large parking facilities because it is possible for customers to double-park while obtaining ice.

An analysis of parking facilities, available at the sites examined, substantiates this last point. Two of the best locations are virtually inaccessible with little parking space available.

On the other hand, all of the poor locations were readily accessible, two of them having excellent parking facilities.

5. Visibility

There is a statistical relationship between the frontage of the lot and good locations. All of the good locations have wide frontages that exceed considerably, the frontages possessed by the poor locations. Frontage, as a location factor, is listed under the heading of visibility because of the nature of the ice depot. Sandwiched in between residences or places of businesses, the machine is hard to locate, unless some prominent nearby landmark is visible to fix the location firmly in the customer's mind.

Frontage as related to set-back, is another significant location factor. The average frontage for the good locations is greater than the average frontage for the poor locations.

A direct relationship exists between set-back and frontage, from

the standpoint of visibility. That is, the greater the frontage, the greater the set-back may be. Of the five good locations, two were at sidewalk position, two at a five-foot set-back, and one at an 18-foot set-back.

The various types of signs used have little advertising value, but serve principally to locate the depot for the customer.

6. Competition

Apparently there is little relationship between good and poor locations and other competing means of selling ice. Only one of the locations studied is close enough to another vending depot to feel their competitive effect. In this instance, less than three blocks separate the depots.

By the same token, the best location is less than two blocks from a cash and carry station with an attendant on duty.

Investigation showed that over 90 percent of the cash and carry station customers had switched over to the refrigerated vending station. Similar percentages applied wherein refrigerated depots were installed up to a distance of 12 blocks from "non-refrigerated cash and carry stations."

The practical results secured from this first survey which provides factual information for the ice industry to use in increasing sales, has prompted a further customer study under the direction of Professors Aberle and Condiff.

If "Sandwiched" Between Existing Structures, Use Ample Illumination and Color to Identify Location in Customer's Mind. Jefferson Ice Co., Chicago, Ill.

Lower Operating Costs and Flexibility Provided by Individual Automatic Units in New Warehouse

LATEST type of automatic refrigeration equipment is featured in the new offices and warehouse which Standard Brands Inc. has completed at a cost of approximately one quarter of a million dollars at 2660 South Eastern Avenue, Los Angeles, Calif., to house the grocery and Fleischmann division in its Los Angeles district.

The warehouse, which covers a total of 11,700 square feet, provides refrigeration units for both normal and low temperature storage. Classified as built-in rooms, the refrigerated sections are constructed of cork. The low-temperature compartments have 8 inches of cork insulation on the floors, ceilings and side walls while the normal temperature compartments have 4 inches of insulation.

Three Types of Rooms

There are three types of refrigeration rooms: (1) normal temperature yeast room, (2) margarine room, (3) low tempeature room. The normal temperature yeast room has an interior floor area of 760 square feet with storage capacity for 63,000 pounds of Fleischmann's Yeast. Used to cool this room is one 7½ hp., water-cooled Baker condensing unit, which operates in conjunction with three Model 360 Kramer Coolmaster evaporator blower coils within the refrigerator.

The margarine room provides an interior floor area of 260 square feet and a storage capacity for 30,000 pounds of Blue Bonnet margarine. The mechanical equipment consists of one 3 hp., water-cooled Baker condensing unit operating in conjunction with one 480 Kramer Coolmaster evaporator blower coil within the refrigerator.

The low temperature room, with a floor area of 1,416 square feet and a storage capacity for 228,720 pounds of frozen eggs, is refrigerated by two 10 hp.. water-cooled Baker condensing units. Each is operated in conjunction with a No. 13 Thermobank system and two TV 350 Kramer blower coils.

One feature of the new refrigeration equipment is a Recold forced draft cooling tower which is used on all of the above refrigeration machines for their water supply. This cooling tower re-uses all the condensing water, resulting in a saving of approximately 95 percent of the water normally required for the refrigeration with city water cooling.

The refrigeration equipment of the new warehouse was selected by Standard Brands engineers to give complete flexibility and at the same time provide economical operating costs. Since each refrigeration room has its own complete cooling equipment, a breakdown of one system will not affect the others. As an added precaution, if the refrigeration breaks down in the low temperature room for some reason, the cooling can be carried on by one of the other systems until repairs can be made.

Besides providing that flexibility, the individual units also cost less to operate. They make possible the use of much smaller size compressors on which replacement parts are readily available. Also, maintenance and repairs are relatively simple.

R. H. Cantley, Los Angeles district manager for the Fleischmann Division, and A. S. Agdan. Los Angeles district manager for the Grocery Division, are in charge of operations.

Swift's Premium chicken displayed on a bed of crushed ice—one of the pictures, in color, to be used in advertising poultry on ice.

1,000,000 tons of ice needed to get this "tender grown" chicken to consumer in freshest condition.

Large meat packer in national merchandising program promotes "ice freshness" story in processing of product and advocates poultry displays in "ice man's ice" in retail outlets to insure product reaching consumers table in top condition.

Here is a new ice market, backed by national advertising and dealer helps, featuring ice as necessary for both Processing and Retail Display. The campaign has started—The Time to Cash in on it is Now.

Chicken on Ice

AN UNUSUAL type of young chicken in the fryer classification has been developed under the sponsorship of the Poultry Division of Swift & Co. They grow big and plump while still young and tender, attaining weights of 2¾ to 3¼ pounds in approximately 12 to 13 weeks. They can be produced around-the-season, to be available 52 weeks of the year.

This new chicken has been sales tested for more than two years and is being distributed now as both fresh ice-packed chicken and as a consumer packed quick-frozen chicken. In 1949 an elaborate sales promotion and advertising test campaign was inaugurated in 12 important cities in the United States. Supported by well organized merchandising activities in the form of cooking schools, dealer tie-ins, instruction on display, sampling among dealers, thorough product story in film form, this new product was accepted by outstanding chain and independent food dealers. Consumers, too, in the test city areas indicated a preference for this product in a surge to dealer's stores.

1950 Advertising Campaign

Swift & Company was so convinced of the importance of this product that they have planned to launch it as the first nationally advertised fresh poultry ever offered the American market. Beginning in April 1950 such magazines as Life, Saturday Evening Post, Better Homes & Gardens, Ladies' Home Journal and True Story will carry a complete national advertising program on this product. Don McNeill and the Breakfast Club radio show will be used. Merchandising activities will be on a large scale in support of this national advertising. Publicity will be furnished by the Martha Logan kitchens of Swift and Company's headquarters to home economists on newspapers and through radio stations, to clubs, schools, colleges, churches, etc., as a further aid toward making the American housewife aware of this Premium Chicken.

Magazine Advertising Schedule

The magazine advertising schedule will be as follows: Life, April and September, double page spread; Saturday Evening Post, April to October inclusive; Ladies Home Journal, May, June, August, September and October; Better Homes and Gardens, April, May, July, August and October; True Story, May, July and September. Broadcasts over the Breakfast Club radio program will start in March and continue to October inclusive, one day each week with two days each week during July and August.

Each individual chicken is branded with a special Tender Grown Swift's Premium chicken tag on the wing and dealers are urged to use this tag and other merchandising suggestions from Swift to introduce this new product to the American public.

Why Use Ice?

The success of this new product, according to Swift is due not only to the quality of the product but to the fact that it is *processed in ice*. Ice will remove the body heat in less than 2 hours. The conventional method of placing the birds in coolers takes from 16 to 18 hours. With the body heat being removed within 1½ to 2 hours, this makes it practicable to actually have the chickens on display in the dealer's store the same day they are processed or at least by the morning of the following day.

Processors of the new commercial chicken packed in ice are advocating to retail dealers that the chickens be displayed in ice. Ice prevents shrinkage. Poultry displayed in a mechanically refrigerated display case will shrink. This is a big factor considering the amount of total poultry business any one dealer may do in a year's time. Thus, ice prevents the chicken from drying out and helps to protect the natural bloom, and aids in retaining the natural juiciness. Ice is also a splendid merchandising agent. Retail dealers are reminded that fish has been satisfactorily displayed in ice for many years, also of the successful

joint efforts of the fruit and vegetable industry and the ice association in advocating the display of those products on ice. So, as a natural humidifier, "The Ice Has It."

Get Share of This Million Ton Ice Market

The new Swift advertising of poultry on ice promises a new market for one million tons of ice in 1950. This advertising advocates the use of iceman's ice. But it won't be unless ice manufacturers tie-in with this program and see to it that their ice is used. Contact your local Swift organization and let them know that you have ice for sale. Call your sales force together and tell them about it. See that every food store is personally contacted and told why ice should be used in their dressed poultry cases and where they can obtain this modern ice service.

The first year of Swift's three-year program had to do with analysis and surveys of the needs of both salesmen and dealers in regard to sales and promotional tools. During that period, many hundreds of retail stores were visited and numerous sales meetings and dealer meetings were held.

The results are all contained in a sales meeting kit available to 3,000 Swift salesmen. The kit contains a new sound slide film giving the story of this new chicken, wall or window posters in which ice is prominently displayed, small display case banners, a montage of dealer advertisements, and a recipe folder.

The second year of this program had to do with "test advertising. In twelve cities in the United States, selected on basis of their location, their population, the amount of competition, distance from the source of supply and whether they are in a high or medium income area. The test advertising campaign started at a different date in each city so that it could be properly initiated and merchandised. In each city, the local ice companies were contacted and the entire program reviewed with them before the campaign started so that they not only would be fully informed in advance, but would be in position to capitalize on the opportunity that it offered.

The third year of this three-year program, the one now starting, has to do with national advertising, plus sustaining advertising in the twelve 1949 test cities, plus local promotions in an additional number of cities.

The Ice Industry Ties-in

The important fact of this advertising program, from the standpoint of the ice industry, is that crushed ice will be used for processing this chicken, and retail stores will be expected to display it on beds of crushed ice. During 1950 it is expected that a billion pounds of chicken will be processed and sold. It takes about a pound of ice per pound of chicken for the processing and about the same amount for retail display. So here's virtually a new market for one million tons of ice.

Also important to the ice industry is the fact that in all the advertising done by Swift, ice will be featured as necessary for proper processing and display. Pictures of dressed chicken on a bed of crushed ice will be shown, in color, in every advertisement. The copy in all advertising will tell about advantages of ice. Beautiful and useful point-of-sale merchandising material for the retail store, such as window display banners, and small posters for the display case, all will feature ice with pictures and words. The newspaper advertising will feature *chicken on ice*. And the national radio program will do the same.

Swift & Company is the first to recognize this valuabe tie-in with the ice industry and expects to reap major rewards through establishing this new "Premium Chicken on Ice" firmly in the minds of retail stores and their customers. But doubtless other large poultry producers, and many smaller ones, soon will recognize this most efficient method of merchandising, particularly if icemen encourage the idea by local tie-in and cooperation. Several of the ice industry advertisements for 1950, especially in the trade paper field will feature poultry icing.

All of this advertising advocates the use of iceman's ice. But it won't all be unless icemen everywhere will tie-in and see to it that their ice is used.

How to do that? Contact your local Swift organization, or their local area salesmen of which there are about 4,000. Have a meeting of your sales force. Enthuse them, and explain this new ice merchandising program to them. Swift has sales portfolios and meeting guides that are available, also an excellent slide sound film. And above all see that every food store, every possible retail outlet, is personally contacted and told the merchandising advantages of ice in promoting, increasing, and retaining profitable poultry business.

Immediately after inspection, the dressed bird is placed in a bed of crushed ice where chilling is achieved within two hours.

Mobile Fishing Vessels Face Competition from Imports

A trawler "Deep Sea" put in service in 1949 for crab fishing in the Bering Sea. This vessel processes, freezes and stores the catch in refrigerated holds. The quick freezing equipment handles 1200 lbs. per hour at minus 25 F. and permits continuous handling of crab or fish in the production line without interruption. The two holds, with capacity of 8,500 cubic feet are held at zero degrees Fahrenheit.

A STUDY has been issued by the Economic and Social Council of The United Nations on technological development in fisheries, with special reference to the "factory ship" in the United States. It was prepared by A. W. Anderson, Chief, Branch of Commercial Fisheries, Fish and Wildlife Service, Department of the Interior, Washington, D. C.

Mobile vessels processing their own catches or the catches of an accompanying fleet of fishing craft have operated in the United States fisheries since early in the 16th Century beginning with salting cod and progressing through whaling, salmon canning, freezing tuna, halibut and salmon, and reducing pilchards, herring and waste to meal and oil.

Recent Developments

Recent factory ship developments have been varied. The Atlantic Coast fisheries are represented only by a proposed 175 foot vessel equipped to trawl, fillet and freeze its catch, and reduce the waste. Gulf of Mexico fishery interests have built or adapted a number of shrimp trawlers to catch, package and freeze shrimp but current operations appear unprofitable.

Western Alaska fisheries have attracted an increasing number of vessels equipped to dress, freeze and transport salmon. The king crab resources also are being fished by additional craft specially built or converted to trawl for king crab, and package and freeze crab meat.

The operations of the Pacific Explorer, 8,800 ton factory ship, in serving as a mother ship and freezer for tuna purse seiners resulted in a series of smaller but more adaptable tuna freezing and transporting vessels for use in waters off Central and South America. The Pacific Explorer operation in Western Alaska produced a large pack of canned king crab but the advantages of a factory ship of its type have yet to be compared in detail with other types of operation.

Filleting is not being practiced on fishing craft but tests indicate that freezing round fish at sea, thawing and filleting them on shore, and packaging and refreezing the fillets may have many advantages.

Study of Freezing at Sea

If the results of a study of freezing fish at sea, which has been under way for some time by the Seattle, Boston and College Park technological laboratories of the Fish and Wildlife Service, continue to be favorable a way will have been found to meet many of the problems of factory ship operation, especially in the fisheries for those varieties later entering into the frozen fish market. These studies were started because New England and Pacific Northwest vessel operators have been confronted with increasing imports of high quality frozen fillets. The excellence of the fillets has been due in large part to the nearness of the fishing banks to the foreign processing plants. Frequently, the imported fillets have been frozen within a day of catching.

A similar situation does not prevail in our groundfish fishing ports. Filleting and freezing at sea is not feasible, at least on our present fishing craft, because of labor and operating costs, space and personnel problems, and the weather. Consequently, other means have been sought in an effort to produce the highest possible quality frozen fillets. Preliminary tests indicate that fish frozen in the round on the fishing vessel soon after catching can be landed in this condition, stored on shore for an appreciable period, later thawed and filleted, and immediately packaged and refrozen with an appreciable increase in quality over the usual product which is gutted at sea, iced, and then filleted, packaged and frozen on shore.

Final results and recommendations are not yet available, particularly with respect to equipment and refinements in techniques of handling, but the procedure outlined appears to have many advantages. It lessens the fisherman's labor at sea by eliminating all dressing of the catch. It permits the vessel to remain at sea until its holds are filled, and increases its fishing radius. Handling of the catch is simplified and may be mechanized to a considerable degree, particularly if freezing in baskets in brine wells is feasible. It may make possible the saving of trash fish, now dumped overboard, for sale to reduction plants on shore. Leaching out of nutrient materials, as now occurs in iced fish, through a combination of melting ice and pressure in

(Continued on page 64)

The Ice Industry

National Association of Ice Industries

Executive Offices
1706 L St. N. W., Washington 6, D. C.

PRESIDENT
H. O. McLain, Chicago, Ill.

EXECUTIVE SECRETARY
Mount Taylor, Washington, D. C.

Selling Ice in Winter

ICE men everywhere are turning their attention to new markets for ice. They know that the slump in ice sales from the war years is a natural economic trend and that there is no reason to hope that they can win back all of those who bought ice during those palmy days. Those who sell ice are in stiffer competition now than ever before, with all sorts of refrigeration services and the only way to keep tonnage from continuing its down trend appears to be to develop new markets for ice.

A remark dropped in casual conversation at the National ice convention was that what the ice industry needs is development of a market for sales of ice in winter. While we will welcome more summer business, what we really need is some method of doing something about our conventionally dull winter months, was the trend of thought. This sounds like a pretty big order, something like selling refrigerators to Eskimos. But maybe it makes sense. And maybe brushing it aside as impossible would show lack of vision. As a matter of fact a considerable amount of ice is being sold now during winter months.

Sales to household and mechanical owners through vending stations, year around icing of dressed poultry, use of ice in retail fish markets; these three outlets alone offer possibilities of increased sales of some millions of tons of ice per year, of which a fair share will be winter sales.

One company which operates a number of vending stations reports that winter sales are only approximately 10 per cent of summer sales. But that 10 per cent is new business and practically none of it would have been sold from the platform or from a delivery truck. Another ice man whose company operates more than 20 vending stations, reports that winter sales are increasing through vending stations at platforms and other places at times when the ice plant is closed. It is his idea that, although such sales now may be nominal, as people learn that it is available, more and more of them will be turning to vended ice, for winter as well as summer use.

The new iced poultry campaign of Swift & Company which promises an increased tonnage of a million tons of ice a year, is a year around project, all the months in the year, and a fair share of this will be winter sales.

Fresh vegetable counters in retail food stores, display counters for fresh fish in fish markets, will use ice in winter, not so much perhaps as in summer, but this is new business for which there were no sales a few years ago.

Winter sales of ice, now, are low enough that they can have no other future trend except upward.

But there may come a time when the outlets cited, and others, may call for enough ice in the cold months to pull the winter ice business out of its conventionally deadly dull doldrums.

Inter-company Sales Contest

THE Greensberg Ice Co., Greensberg, Ind., the Daniel De Prez Manufacturing Co., Shelbyville, and the Home and City Ice Co., Aurora, are participating in an inter-company sales contest. The contest was announced at the final session of the Driver Training Program held at Greensberg February 6. Valuable prizes will be offered to the employees who show the best sales record during the contest period. This sales contest is designed to be a follow-through of the training program and it is expected that the inter-company competition will contribute the stimulus necessary to make it a complete success. Similar contests are being arranged for other groups who are participating in the current Driver Training Program.

Toronto Ice Dealers Sponsor Exhibit

AMONG the many attractive merchandising displays at the annual exhibit of the Hotel Association of the Province at the Royal York Hotel, January 16-18, the one staged by the Toronto ice men got a great deal of favorable comment, not only by the crowd of visitors but in the headlines and news columns of a morning newspaper. An ice bowl with frozen flowers carried an assortment of choice fruits on a revolving stand, in which various sizes of processed ice were also shown. Flanking this exhibit were two handsome stands with fine ice, in which were embedded various food dishes on one side and on the other cold drinks and condiments. Attendants explained the selling value of ice in relation to food and hotel service.

National Ice Advertising for 1950

A DYNAMIC advertising program for 1950 is indicated in the magazine schedule just announced by the Public Relations Department of the National Association of Ice Industries. At a recent meeting of the Operating Committee, media were chosen to carry the bulk of the National advertising schedules. Full color, full-page ads will appear in Life, Saturday Evening Post, Ladies Home Journal and Better Homes & Gardens and one other publication may be added later in the year. The first advertisement will appear in the April 8 issue of the Saturday Evening Post.

Each advertisement in this campaign will be devoted to emphasizing a single ice use—ice chest, table use of ice, party ice, picnic ice, vegetable ice, etc., each being supplemented however with several other uses. In each advertisement, a booklet will be offered which describes and illustrates the advantages of ice refrigeration. The pictures illustrating the advertisement will show up ice in all its sparkling beauty. To get top quality illustrations, one of America's top-flight photographers, Paul Hesse, took the pictures.

Beginning in March and continuing through June there will be a special campaign to help sell domestic refrigerators. This will consist of full page domestic refrigerator advertisements in the two biggest all-fiction magazine groups—the Popular Fiction group and Thrilling Fiction group. These two groups publish 75 magazines read in millions of homes which from the economic standpoint are ideal for the sale of ice refrigerators. This type of media was chosen because it appeals to the income class more likely to include ice refrigerator prospects.

The theme of these advertisements has been sent to ice companies in an attractive brochure showing samples of the completed advertisements. Mats will be made available for use in local advertising.

Adverse Publicity Nailed—Magazine Publishes Retraction

ANOTHER unfair reference to the ice industry has been made—in an article in the January issue of Woman's Home Companion, on old-style 1900 products compared to those of 1950. To describe progress in the methods of home refrigeration a picture of the worst type 1900 "ice-box" was used next to a modern mechanical refrigerator unit.

This reference was spotted by David J. Copeland prominent in the affairs of the National Association of Ice Industries, and past president of the Indiana Association. Mr. Copeland wrote the editor of the magazine protesting against this adverse publicity. The Public Relations Department sent a telegram and followed with a letter by Francis X. Timmons, advertising and publicity director, expressing the view that the picture of the "ice-box" was in poor taste, unfair and misleading and that a modern ice refrigerator should have been used in comparison with the old ice box.

In response the Companion's advertising manager and its editor telephoned the National Association office, promising to right the wrong which they agreed had been done. As a means of doing this, in the March issue Mr. Timmon's letter is printed along with a picture of a modern ice refrigerator and a comment by the editor as follows:

"The Companion heartily agrees that the manufactured ice industry has come a long way since 1900. Many of our readers swear by their ice refrigerators and we are glad to set the record straight by printing (above) a photograph of a sleek 1950 model."

385,000 People in 58 Cities See Vegetable Icing Demonstrated

KEEPING constantly on the go, A. M. Andrich, field service director of the National Association of Ice Industries visited 58 cities across the nation during 1949. Approximately 385,000 people in the food field had the opportunity to view iced vegetable displays. Audiences varied from 18 to 650.

Mr. Andrich attended 16 major conventions, staged 63 individual demonstrations to local produce handlers, and screened "Naturally Yours" 48 times. According to his annual report to the Public Relations Department, he has noted increased interest on the part of icemen and fruit and vegetable handlers in the use of ice for protecting produce at the retail level.

Conventions at which demonstrations were made were as follows: National League of Fresh Fruit and Vegetable Distributors, United Fresh Fruit and Vegetable Distributors, Super Market Convention, The National Retail Grocers, International Apple, Texas Retail Grocers, Eastern States Food Dealers, National Public Health Association, Ohio Retail Grocers, Vegetable Growers of America, Piggly Wiggly Operators Association, North Carolina Ice Association, and Southwestern Ice Manufacturers Association.

Andy also attended the New York State Fair in Syracuse, N. Y., at which the New York Ice Association sponsored two large booths. One booth was utilized for ice equipment and appliance display; the other was an 18-foot iced fruit and vegetable display. The latter was set up in the Horticultural Building. So much attention did this booth attract that Andy played host to all of the various "queens" that were crowned from time to time during the Fair. Even Governor Dewey stopped at the ice booth to gaze at and admire the sparkling display. Crowds stood in line every day to sample a large salad bowl. Over 346,000 people attended the Fair. According to Andrich a large portion saw the ice booth, for 80 bushels of vegetables were consumed by those who sampled the salad bowl.

Here's what Andy has to say about his attendance at the Vegetable Growers of America Convention: "This event started out as a vegetable growers convention, but it seems to me that the iceman stole the show. Ice carvings were attractively set on the banquet table. The world's largest salad bowl was beautifully displayed on ice. All vegetables or salads served were surrounded with ice. A vegetable merchandising display was a part of the regular convention program sponsored by the A & P Company. A demonstration showing how to use ice was included as a means to better selling. The vegetable icing display booth of the National Association of Ice Industries, induced many inquiries about precooling, protecting during storage, and methods of creating greater impulse sales."

The Piggly Wiggly Convention took Andy Andrich to Havana, Cuba, via steamship S.S. Florida. He was one of 600 aboard. Vegetable, fish and poultry icing were exhibited and brought about numerous compliments from all who saw them.

Mr. Andrich mentioned that in almost every city visited he and the local iceman called on stores to make new installations or conversions from mechanical refrigeration to ice protection. To sum up the attitude of what icemen who have seen Andy in action think about his work, the following is an excerpt from a letter received from Charles H. Fenske, manager of Oscar Mayer Ice Service: "Andy Andrich did a wonderful job for us here. My feeling after having him with us for a couple of days can be summed up thusly: It's too bad there aren't more Andy Andrichs."

Cost Accounting for the Ice Industry

By Paul H. Andres
Southwest Ice & Dairy Products Co.,
Oklahoma City, Okla.

IT IS a fundamental truism that price structures must be based on costs. Too often this fundamental is either overlooked or avoided, and price structures, therefore, are actually based upon emotion and inaccurate or incomplete facts. Consequently, in this discussion, we want to deal in true and accurate facts and conditions that are easily recognizable by all men of the ice industry. It is my opinion that the best way to do this is to take the actual operating results of an average ice plant and analyze these results thoroughly. The plant we have selected has been picked after considerable thought, because it has many characteristics common to the average small ice plant throughout America.

It is operated in a community having a population of approximately 11,000 whose livelihood is dependent upon agriculture of the surrounding territory and local industry in the proportion of about 60 and 40 percent respectively. The buildings and machinery are about 30 years old. The ice manufacturing capacity is 48 tons per day, but it operates during the season, except in extreme peak load conditions, at the rate of 30 tons per day with one combination operator-puller per shift. It is a steam driven condensed water plant with a season storage of 750 tons, and operating costs compare favorably with the average electrically driven plant of its size within the area in which it is located.

The community served has the highest percentage of mechanical refrigerators per 1,000 of population of any town or city in which our companies operate. Usually the plant sells a minimum of 700 tons of carload ice to railroads each year, and to small town dealers in five or six small agricultural towns within the county. The plant is well located for retail sales at plant dock and two delivery routes are operated in the winter months with service on an every other day basis to the domestic customers and four delivery routes in the summer months with service on a daily basis to all customers.

Prepared ice facilities were made available during the year under review and a vending machine for block and big ice was installed during the summer season. The prices for ice are 80 cents per cwt. for retail dock and retail delivered block ice; 50 to 60 cents per cwt. for commercial dock and delivered block ice and 65 to 80 cents per cwt. for prepared ice; $1.20 to $1.33 per cwt. for retail dock prepared ice; $5.00 per ton for carload ice; and $7.00 per ton for outside dealer ice.

The basic relationship between costs and price structures in the ice industry is a subject of keen interest to all ice company executives. This paper presented at the 32nd annual convention of the National Association of Ice Industries, provides a practical method of establishing such relationship. As a former cost accountant, Mr. Andres has had experience in creating and installing accounting systems for ice companies. On the basis of this knowledge, supplemented by his later experience as an ice company executive, he presents the subject here as an aid in meeting these cost and price problems.

Now that we have our plant to use as a basis for our discussion our next step is to assemble all the basic facts available and, of course, we want these facts to be as current as possible. So, for this discussion, we have selected the operating results for the preceding year, which, in this instance, is for the year ended November 30, 1948. If you should use this method you, no doubt, would use the results for the year ended December 31, 1949 or your last fiscal year.

The first information we must have is an accurate analysis of our sales, both in tons and in the amount of money received therefor so we can arrive at the average selling price per ton of each type of ice sold. This analysis for over Blank ice plant is shown in Table I.

It will be noticed that ice sales are broken down into four general classifications namely: Ice sold for resale, dock ice sales, delivered sales, and vending machine sales, and that retail and commercial sales under the main classification are shown as are also interplant, carload sales, and sales to

TABLE I—AN ANALYSIS OF ICE SALES FOR THE YEAR ENDED NOVEMBER 30, 1948
(A Summary of Daily Reports of Sales for the Year)

	Total			Block Ice			Prepared Ice		
	Tons	@	Amount	Tons	@	Amount	Tons	@	Amount
ICE SOLD FOR RESALE:									
Interplant	58	$ 4.00	$ 232.20	58	$ 4.00	$ 232.20			
Car icing & carload	798	5.00	3,990.00	798	5.00	3,990.00			
Outside dealers	838	7.00	5,865.29	838	7.00	5,865.29			
Total Ice Sold for Resale	1,694	5.96	10,087.49	1,694	5.96	10,087.49			
DOCK ICE SALES:									
Retail	1,125	$14.60	$16,431.06	1,007	$14.21	$14,314.66	118	$17.94	$2,116.40
Commercial	105	10.26	1,077.78	105	10.26	1,077.78			
Total	1,230	14.23	17,508.84	1,112	13.84	15,392.44	118	17.94	2,116.40
DELIVERED ICE SALES:									
Retail	599	$15.27	$ 9,146.91	599	$15.27	$ 9,146.91			
Commercial	1,001	11.87	11,882.98	763	10.69	8,159.78	238	$15.65	$3,723.20
Total	1,600	13.14	21,029.89	1,362	12.70	17,306.69	238	15.65	3,723.20
VENDING MACHINE SALES	109	$17.55	$ 1,912.40	89	$15.60	$ 1,388.40	20	$26.20	$ 524.00
TOTAL SALES	4,633	$10.91	$50,538.62	4,257	$10.38	$44,175.02	376	$16.92	$6,363.60

outside dealers, both as to block ice sold and prepared ice sold. This report is the recapitulation of the daily plant reports assembled from the dock and routemens reports.

Your attention is invited to the fact that this plant sold 4,633 tons of ice at the average selling price of $10.91 per ton. It received an average of $10.38 per ton for the block ice sold and $16.92 per ton for the prepared ice sold. Incidentally so far in 1949 this plant has more than doubled the prepared ice sales at the approximate average selling price per ton shown above.

There are other significant things about this statement. Please notice that the average selling price per ton of dock ice exceeds the average selling price per ton of delivered ice in total as well as in block and prepared ice sold; that retail delivered sales are only 13 per cent of total tons of ice sold and 18 per cent of total dollar sales; and that commercial delivered sales represent 22 per cent of the total ice tonnage and 26 per cent of total dollar sales. These are very significant facts because commercial sales are growing and retail sales are diminishing.

The next step in our analysis is to look at our operating statement shown in Table II.

It will be noticed that ice sales are shown as a separate item. The account "Miscellaneous Sales—Net" shows the gross profit of non-operating income and represents the gross profit from salt sales, rentals on refrigerated rooms, beer storage revenue, etc., and the account "Refrigerator Sales—Net" shows the net profit on all appliance sales at this plant in which has been included all sales and commission expenses. Under the caption "Cost of Sales and Revenue" is included the depreciation, ad valorem taxes, insurance on buildings and machinery, and social security taxes applicable to the labor included under this caption. The Selling and Delivery expenses are self-explanatory. The item "General Office Administrative" represents the proration of the central office expenses for administration, as this plant is one of approximately 30 plants operated by our companies.

Our next task is to distribute these expenses to two main classifications namely: fixed and constant costs, as between plant costs and selling and delivery costs, and variable costs, as between plant or production costs and selling and delivery costs.

Now is the time for all icemen who are addicted to the use of the slide rule, calculus, or who are in any way meticulous about extreme accuracy in figures, to leave the room. For, from here on out we are not going to be too concerned about details, as long as we stay on the main theme.

TABLE II—STATEMENT OF NET INCOME FOR THE YEAR ENDED NOVEMBER 30, 1948
SHOWING DISTRIBUTION OF FIXED, CONSTANT, AND VARIABLE COSTS

	Year Ended November 30, 1948	Fixed & Constant Costs		Variable Costs	
		Plant	Selling & Del. Costs	Plant	Selling & Del. Costs
SALES AND REVENUE:					
Ice sales—net	$50,538.62	$	$	$	$
Miscellaneous sales—net	1,165.93	(1,165.93)			
Refrigerator sales—net	11.56	(11.56)			
Total sales and revenue	51,716.11				
COST OF SALES AND REVENUE:					
Labor	5,426.46	2,400.00		3,026.46	
Fuel, power and water	5,516.47	960.00		4,556.47	
Ammonia and miscellaneous supplies	637.91			637.91	
Maintenance—building and machinery	1,271.68			1,271.68	
Decrease in inventory	(458.07)			(458.07)	
Depreciation, insurance and taxes:					
Depreciation	1,940.86	1,940.86			
Ad valorem taxes	725.12	725.12			
Insurance	492.84	423.18		69.66	
Social security taxes	164.69	73.20		91.49	
Total cost of sales and revenue	15,717.96				
Gross Profit from Sales	35,998.15				
SELLING AND DELIVERY EXPENSES:					
Sales supervision and advertising	1,283.19				1,283.19
Labor—delivery	5,231.96				5,231.96
Labor—dock men	2,858.71				2,858.71
Labor—ice sizing	937.99				937.99
Sized ice supplies	936.26				936.26
Gas, oil and garage expense	1,175.75				1,175.75
Maintenance—delivery equipment	583.66				583.66
Miscellaneous selling and delivery expenses	947.19		210.00		737.19
Dues, donation, etc.	203.34		203.34		
Telephone, stationery, etc.	375.13	240.00			135.13
Depreciation, insurance and taxes:					
Depreciation delivery equipment	1,459.54		1,459.54		
Insurance	250.20		80.73		169.47
Social security taxes	274.91				274.91
Total selling and delivery expenses	16,517.83				
Net Profit from Sales	19,480.32				
GENERAL AND ADMINISTRATIVE EXPENSES:					
Salaries—manager and clerks	3,775.46	2,700.00			1,075.46
General office administrative	3,393.10	3,393.10			
Social security taxes and insurance	185.75	185.75			
Miscellaneous general expenses	382.22	382.22			
Total general & adminstrative expenses	7,736.53	12,245.94	1,953.61	9,195.60	15,399.68
Net Income Before Income Taxes	11,743.79				
Reserve for Income Taxes*	4,697.52				
Net Income	7,046.27				
Average Per Ton	1.52			1.98	3.32

* As this plant is a part of a large company 40% is used.

What are "Fixed and Constant Expenses"? If you will look at the statement you will notice that under this classification you will find items of cost (less miscellaneous revenue) that are either fixed or constant whether you sell 3,000 tons of ice or, in this instance, 4,633 tons of ice.

What are variable costs? Again if you will look at the statement you will notice that under that classification you will find items of costs which tend to vary with the number of tons of ice manufactured and sold within reasonable limits.

Plant Fixed and Constant Costs

Now let's look at the "Plant Fixed and Constant Costs." We'll have to skip around a bit in order to follow a logical sequence. Unfortunately this plant has a central office and must pay its pro rata cost of that office so we place in this column the total of these expenses amounting to $3,393.10. The manager's base salary is extended to this column as is the social security and unemployment insurance costs related thereto, together with miscellaneous general expenses. Out in the plant we must have an engineer the year around so his base salary is included, as is the fuel, power, and water minimum demand costs for keeping temperatures. The above costs, for the purpose of this discussion, are deemed to be constant costs, whereas the amounts shown for depreciation, insurance and taxes are deemed to be fixed costs inasmuch as they are based on the investment or value of the plant and equipment. Of course the plant manager must have a telephone and some stationery, so these costs are also included.

The fixed and constant costs for selling and delivery are primarily the depreciation, license expense and insurance on the delivery equipment.

As reflected by the statement, all other expenses have been considered "Variable Costs" and are more or less self-explanatory with the possible exception of the last item captioned "Salaries—Manager and Clerks" amounting to $1,075.46 which represents supplemental help in the office, and manager's refrigerator commissions on collections.

At this point it can be assumed that we have available all essential facts pertaining to the operations of this plant, and that we are now in a position to make an intelligent analysis of our profit possibilities and of our operating problems for the ensuing year after making certain assumptions which are based on expected tonnage and general economic conditions that might prevail. It is believed that this can be best accomplished with a graph showing the sales in ton per year and the sales in thousands of dollars per year.

NOTE: The original paper presented these graphs in a sequence, each item being shown as described until the graph was completed. In this article, only the finished graph, with all items, is reproduced.

Making the Graph

It is recommended that you obtain graph paper with spacing of 10 spaces per inch on both vertical and horizontal lines, with heavy ruling on every fifth or half inch line. The scale of tons should be made on the horizontal line at the bottom of the chart beginning from left to right and the scale of dollars on the vertical line at the left of the chart. In determining the unit per space for the graph it is recommended that the unit used will produce a total scale of approximately 1½ times the annual tonnage and dollar sales respectively. It will be helpful if units can be kept in multiples of five.

For our purpose it will be noticed that a total scale of 6,000 tons and $70,000.00 is used whereas the actual figures are 4,663 tons and $50,538.62.

Fixed and Constant Costs

The next step is to plot the fixed and constant costs of the plant on our graph. From the statement we find that the total of these items is $12,245.94. By locating this point on the vertical dollar scale we then draw a line parallel to the horizontal lines of the graph. It is recommended that you also determine the amount of fixed costs which, in this example comprise the accounts of depreciation, ad valorem taxes and insurance amounting to $3,089.16, and plot this in as described above. You can now observe what your fixed and constant costs are regardless of whether you manufacture or sell a single ton of ice. In the example shown it amounts to approximately $2.65 per ton. Fixed costs and constant plant costs are shown in the graph as line A and B.

Variable Plant Costs

If it were possible for you to argue back, I'm sure you would do so at this point, because we are making the assumption that the costs captioned "Variable Costs—Plant" vary directly with the tons of ice sold, which according to our statement is $1.98 per ton. The principal reason that we feel safe in making this important assumption is that we are exercising the responsibility of management in attempting to determine the profit to be realized in the ensuing year in which the sales tonnage will vary not more than 15 per cent either up or down, and we feel that careful management will keep the per ton costs constant within these limits. If you become technical and assume unusual variance in sales you might win yourself an argument, yet it is doubtful and we're trying to be practical.

Multiply the "Variable Cost—Plant" of $1.98 per ton by 5,000 tons, which latter figure was used to simplify our arithmetic, and your result would be $9,900.00 plus $12,245.94 which equals $22,145.94. Find this point on the vertical line above 5.000 tons on the scale and make your profit. Draw a straight line from the point previously determined on the dollar scale representing $12,245.94 through the point established and equalling $22,145.94. If you desire to check yourself you may select any point between 0 and 6.000 tons and multiply by $1.98 plus $12.245.94, and see if the point thus established is located on the line just drawn.

The line in fact represents the inventory value or cost of ice manufactured and sold, which, in this instance, equals the sum of the fixed and constant plant costs amounting to $2.65 per ton and the "Variable Cost—Plant" amounting to $1.98 per ton for a total of $4.63 per ton.

This amount of $4.63 per ton is the prime cost of ice to be sold, before any selling and delivery costs are considered, regardless of whether the plant sells to peddlers or through its own delivery system. This is shown in Line C in the graph.

Fixed Selling and Delivery Costs

As indicated we have plotted the inventory value of the ice manufactured and to be sold. We now must plot the fixed selling and delivery costs which, in this instance amount to $1,953.61, and represent the depreciation and insurance on equipment used to sell and/or deliver ice and the necessary miscellaneous costs incident thereto. In this instance depreciation and insurance on delivery equipment is included. If ice is to be sold through peddlers, these costs would only include the depreciation, etc. of any retail docks, vending machines, etc.

In order to plot these costs on the graph we must arrive at two points. The first point is on the dollar scale at the left and is $1,953.61 above the point of fixed and constant costs amounting to $12,245.94 totalling $14,199.55. The second point can best be located on the 5,000 vertical line in

the amount of $1,953.61 above the "Variable Cost—Plant" line and which totals $24,099.55. Then draw a straight line as shown in Line D in the graph.

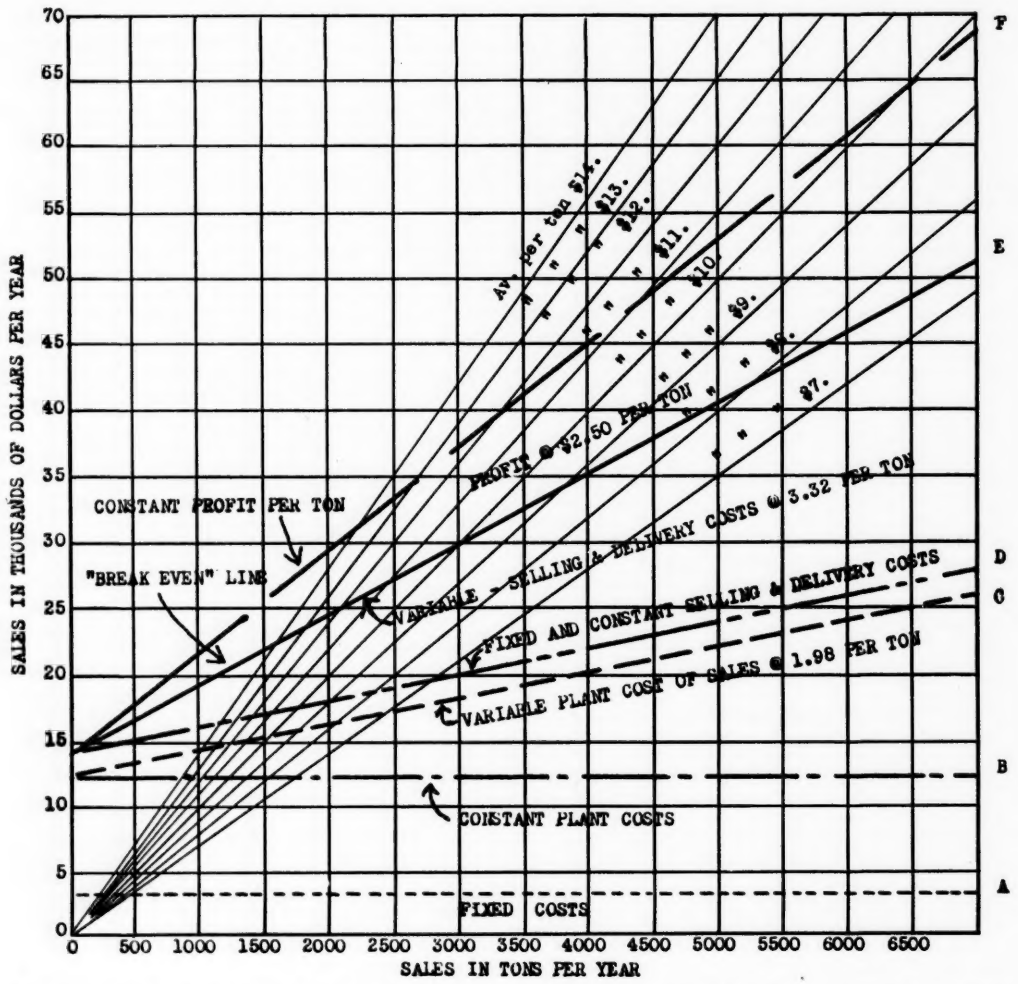
Variable Selling and Delivery Costs

The variable selling and delivery costs are subject to the same comments made previously on the variable plant costs, and we have assumed that the per ton cost for these items will not vary much within reasonable fluctuations of tonnage sold. By referring to the statement we find that these costs amount to $15,399.68 or $3.32 per ton. We can best locate our point on the graph by multiplying $3.32 by 5,000 tons, which equals $16,600.00 and by adding this amount to the accumulated total of $24,099.55, previously referred to, we get a total of $40,699.55 which can be located on the 5,000 ton vertical line. A straight line drawn from the intersection of the fixed and constant selling and delivery costs and the left hand dollar scale at $14,199.55 and the point just located will give you the theoretical break-even line for the ice sold. This break-even line represents, in our example, $8.37 per ton. It is shown in Line E in the graph.

Net Profit per Ton

Each of us will have a different idea as to the profit we desire from our operations, but for our example the net profit per ton before deducting provision for income taxes has been set at $2.50, which conforms with our statement. Smaller plants may try to make more, and larger plants may try to make less per ton.

By again using our 5,000 ton vertical line for convenience we find our point at $12,500.00 above the previous figure used of $40,699.55 which totals $53,199.55. By drawing a straight line through this point and the point of strain, the intersection of the fixed and constant selling and delivery costs and the vertical dollar line, we have the constant



Composite graph of sales and costs for previous year to be used in determining the average selling price and profit per ton of ice estimated to be sold in current year.

profit line of $2.50 per ton. This is shown in Line F of the graph.

Average Selling Prices

It will be noticed on the final or composite graph which follows that we have superimposed eight straight lines radiating from the zero point on both scales to project the average selling prices ranging from $7.00 per ton to $14.00 per ton. In order to locate your point on the graph for each line the simplest way is to multiply 5,000 by each of the average selling prices. For example 5,000 times $7.00 is equal to $35,000.00. Find this point on the graph on the vertical 5,000 ton line and draw a straight line to the zero point. Continue this process until all 8 lines are drawn.

For all practical purposes the graph is now complete, and if we have correctly located all points and lines it should check out with the actual statements which we have before us.

It will be noticed that if we follow the line between 4,600 tons and 4,700 tons vertically to the line at which it crosses the constant profit line and read the total amount of revenue that it represents on the vertical dollar scale you will find it intersects between $50,000.00 and $51,000.00—the actual being $50,538.62. You will also notice that at the point on the scale representing 4,663 tons that the average selling price per ton is just a little less than $11.00—the actual being $10.91. So apparently we have correctly plotted the graph.

Using the Graph to Solve Cost and Price Problems

We are now ready to use this graph as an aid in attempting to solve some of our problems.

First assumption: What would the average selling price per ton have to be in order to make $2.50 per ton net profit if tonnage dropped to 4,100 tons in 1949? The answer is quickly obtainable. Just follow the vertical line above 4,100 tons until it crosses the constant profit line and read the result which is about $11.25 per ton or an increase of 34 cents per ton on all tons sold, with total sales equalling about $46,100.00. In order to raise our average selling price per ton it will be necessary that we merchandise and sell more tonnage in the higher selling price ranges. By referring to our Ice Sales Analysis Chart we would possibly conclude that more emphasis should be put on selling retail delivered ice, prepared ice, or retail dock ice. If we conclude we cannot raise the average selling price on the entire 4,100 tons, then our problem is to reduce the variable plant costs and selling and delivery costs 34 cents per ton or a total of $1,394.00 if we are to maintain our assumed profit at $2.50 per ton.

Second assumption: What would the average selling price per ton have to be in order to make $2.50 per ton net profit if tonnage increased to 5,000 tons in 1949? The answer is again quickly obtainable from the graph. The total sales would be about $53,200.00 and the average selling price per ton about $10.65, or a drop of 26 cents per ton from our actual example of $10.91 per ton which means that the additional 367 tons of ice would have to be sold at a minimum average selling price of approximately $8.00 per ton, assuming of course that the past distribution of sales remained about the same. If however no market was available except, for example, $6.00 per ton for ice we then would have to reduce variable costs at least 10 cents per ton for all tons sold, or $500.00, if our assumed constant profit of $2.50 per ton is to be maintained.

So far in this discussion we have been dealing primarily in the average selling price of an average ton of ice, and we have indicated the resulting changes to selling price or costs if volume of ice sales should decrease or increase within reasonable limits, in order to maintain our assumed average profit of $2.50 per ton.

Third assumption: How much profit, if any, did the low price ice contribute to our total profit, and what effect did it have on the price of other services rendered by the Blank Ice Plant?

As we all know there are two schools of thought on this question. The most prevalent among icemen is that the low price ice to railroads, dealers, etc. is the ice produced after the normal sales requirements are satisfied and therefore the only costs attributable to this ice is labor, power, and water. The other theory is that all ice produced at a plant should bear all costs proportionately.

We are not going to argue this point in this discussion, but it is our opinion that neither is correct, inasmuch as there are many fixed and constant costs ignored by those who take the first position, and few if any costs are eliminated in the second position. Only a time study and complete analysis will determine the true facts.

In our Blank Ice Plant analysis of sales you will notice that 1,694 tons of ice was sold for $10,087.49, or an average of $5.96 per ton. The total sales were 4,633 for $50,538.62, or $10.91 per ton, so if we deduct these two sets of figures we find that 2,939 tons were sold for $40,451.13. If we will refer to our graph and follow the vertical line up from 2,939 tons to a point opposite $40,451.13 on the dollar scale we can quickly determine that we actually received an average price of $13.76 per ton for this ice.

Our graph indicates that the average cost of ice sold was $8.41 per ton, which point is located at the intersection of the break-even line and the vertical line above 4,633 tons. So if we assume that all ice produced should bear all costs proportionately, it would indicate that we lost $2.45 per ton on our carload and dealer ice and made a profit of $5.35 per ton on our other ice sales. If, however, we assume that the inventory value of $4.63 per ton as reflected by our graph is actually the cost of the low priced ice, on the theory that fixed and constant costs plus manufacturing variable costs are the only costs applicable, we then can quickly find that we made a profit of $1.33 per ton on this ice, which is the difference between the average selling price of $5.96 and the average inventory costs amounting to $4.63 before any selling and delivery expenses are added, or a total of $2,253.02. By substracting this result from the total net income before income taxes of $11,743.79 we find that the 2,939 tons sold for other uses yielded a profit of $3.23 per ton, the reduction being due to the fact that it had to absorb all delivery and selling costs plus the burden of bringing all ice sold to the point where $2.50 could be realized, or in other words an average of $13.76 per ton had to be realized for the 2,939 tons sold.

Fourth assumption: What would happen if we reduced our average selling price 5 cents per cwt., or $1.00 per ton, with the thought of increasing consumption?

By referring to the graph we notice that our present average selling price is $10.91. Therefore our new price would be $9.91, or for practical purposes $10.00 per ton. Follow the superimposed line representing the average selling price of $10.00 until it intersects the constant profit per ton line and it will be noticed that the vertical line which is also intersected, represents 6,400 tons on the tonnage scale which means we must increase our sales about 1,767 tons, or 38 per cent, if a $2.50 constant profit per ton is to be maintained. If we should decide we would be satisfied with a profit of $2.00 per ton, which line can be superimposed on the graph, we would have to increase our tonnage to approximately 5,200 tons, an increase of 567 tons, or 12 per cent, and our total net profit would be $1,343.00 less or we would have to reduce costs by $1,343.00 to break even with the profit from our previous tonnage.

Field School Teaches Ice Men to Sell

THE first of six field schools for ice company executives was conducted in Akron, February 6-11, by the Personnel Training and Marketing Department of the National Association of Ice Industries. Twenty-one men representing ice companies in 12 Ohio and West Virginia cities attended.

The week of instruction was a more concentrated version of the two-week course previously presented to 11 classes in Washington, D. C. Thomas W. Douglas, Superintendent of the Department's National Ice Marketing Institute, was in charge. Classes were held in Akron at the Liedertafel Club.

Icemen who attended the first NAII Field School, held in Akron, February 6-11, pose at their graduation dinner. *Standing at rear are the class officers. Left to right, they are: E. N. Callicoat, National Ice Company, Mansfield, Treasurer; Ralph M. Beachy, Ice Delivery Company, Toledo, Secretary; Jack Wightman, Serv-Ice Delivery Company, Akron, President; Joseph Dosztal, City Products Corporation, Cleveland, Vice President; and Robert H. Smith, Railways Ice Company, Willard (O.), Class Philosopher.*

Others in the picture: Andrew Andrich, NAII Field Service Director; Gerald Bain, Smith Coal & Ice Company, Tiffin; William Besselman and R. M. Blaser, both of the Ice Service Company, Canton; John Coulter, H. D. Devol, Richard Fischer, Herbert Marple and William Rouse, all of Serv-Ice Delivery Company, Akron; Thomas W. Douglas, Superintendent, National Ice Marketing Institute; Albert Fickes, Minglewood Coal and Ice Company, Wooster; Arthur Froelich, D. W. Nicklas and Paul Nozar, all of City Products Corporation, Cleveland; Boyd Fulmer, Ashland Ice Company, Ashland; Guy W. Jacobs, Director of Public Relations, NAII; Edgar A. Kellberg, Steubenville Ice Company, Steubenville; L. H. Klages, President of the Klages Ice and Coal Company, Akron; Thomas Koch, Shelby Ice Company, Shelby; W. E. Miller, Diamond Ice and Coal Company, Charleston, W. Va.; and A. E. Ott, Ice Delivery Company, Toledo.

Supplementing the regular instruction by Douglas, the following special lectures were heard: "The Vegetable Icing Program" by Richard Fischer, Serv-Ice Delivery Company, Akron; "Principles and Techniques of Merchandising" by Stewart M. McKinnon, Assistant Professor, University of Akron; "Principles and Practices of Effective Speaking" by Lewis C. Turner, principal of South High School, Akron; "Human Relations" by Dr. Paul Twining, head of the Psychology Department, University of Akron; and "Public Relations" by Guy W. Jacobs, Public Relations Director, National Association of Ice Industries.

Elected class officers were: Jack Wightman, of the Serv-Ice Delivery Company, Akron, president; Joseph Dosztal, City Products Corporation, Cleveland, vice president; R. M. Beachy, Ice Delivery Company, Toledo, secretary; E. N. Callicoat, National Ice Company, Mansfield, treasurer. Robert H. Smith, Railways Ice Company, Willard, was elected "Class Philosopher," a tribute to his popularity. Smith was a close runner-up in the vote for class president.

A graduation banquet was held Saturday, February 11, at Iacomini's Restaurant. Attending, in addition to the class members, were Guy Jacobs, who handed out certificates of graduation; Richard Fischer; L. H. Klages, President of the Klages Ice and Coal Company, Akron; and Andrew Andrich, Field Service Director, National Association of Ice Industries.

A news release about the school was distributed to newspapers in the home cities of all class members by the Public Relations Department of the National Association. It appeared Friday, February 10, in the Akron Beacon-Journal. The release was also sent to Akron radio stations, and as a direct result, one of the stations interviewed Walter Blessman, of the Serv-Ice Delivery Company, Akron, on a daytime program.

Publicity for the school in all cities on its schedule will be handled in the above manner. According to Daniel A. Prager, NAII Director of Personnel Training and Marketing, the course will be conducted on a one-week basis successively in Los Angeles, San Francisco, Monroe (La.), Little Rock and Indianapolis. The Indianapolis class will conclude April 29.

Altogether, 393 years of experience in the ice business were represented by the 21 members of the Akron class. Besides the five class officers named above, those attending were: John Coulter, H. D. Devol, Herbert Marple and William Rouse, all of the Serv-Ice Delivery Company, Akron; Arthur Froelich, D. W. Nicklas and Paul Nozar, City Products Corporation, Cleveland; A. E. Ott, Ice Delivery Company, Toledo; William Besselman and R. M. Blaser, Ice Service Company, Canton; Gerald Bain, Smith Coal & Ice Company, Tiffin; Albert Fickes, Minglewood Coal and Ice Company, Wooster; Boyd Fulmer, Ashland Ice Company, Ashland; Thomas Koch, Shelby Ice Company, Shelby; Edgar A. Kellberg, Steubenville Ice Company, Steubenville; and W. E. Miller, Diamond Ice and Coal Company, Charleston, W. Va.

Second Field School

Eighteen key executives from ice companies in southern California and Arizona attended the second field school held at the Rodger Young Auditorium in Los Angeles February 27-March 4. As in Akron, the course consisted of 33 hours of instruction in ice merchandising and personnel management. Classes were run by the conference method, with Superintendent Thomas W. Douglas of the National Ice Marketing Institute acting as arbitrator. Three faculty members from the University of California at Los Angeles and Joseph Cardellino of the San Jose Ice Company participated as special lecturers. Mr. Cardellino discussed vegetable icing. The U. C. L. A. instructors, with their subjects, were: C. J. O'Donnell, merchandising; Harrison Karr, public speaking; and Robert Tannenbaum, human relations.

Eighteen executives from ice companies in southern California and Arizona attended the second field school held by the Personnel Training & Marketing Department of NAII in Los Angeles February 27-March 4. Here the students pose at their graduation luncheon with Superintendent Thomas W. Douglas of the National Ice Marketing Institute.

Elected class officers were: Ray Maxwell, National Ice & Coal Supply Company, Riverside, president; Larry Fitzpatrick, Central California Ice Company, Fresno, vice president; Vincent W. Stewart, The Union Ice Company, San Diego, secretary; and Joseph Brosmer, Central California Ice Company, Fresno, treasurer.

A graduation luncheon was held Saturday, March 4, at the Mayfair Hotel. In addition to the four class officers previously named, certificates were presented by Edward Condon to the following: Melvin C. Archibald, Deane F. Link and T. Gilbert Orr, all of The Union Ice Co., Los Angeles; Oscar Grab, Southern Counties Ice Co., Los Angeles; Russell E. Budge, The Union Ice Co., Van Nuys, Frank S. Dickson, The Union Ice Co., Glendale; James J. Doherty, Central California Ice Co., Visalia; Frank R. Elliot, The Union Ice Co., San Pedro; M. A. English, Crown City Ice Co., Pasadena; R. J. Keyser, The Union Ice Co., Redlands; Nathan Navarre, Central California Ice Co., Bakersfield; R. Lee Scarborough, The Union Ice Co., San Bernardino; C. W. Smith, The Union Ice Co., Oxnard; and Joseph A. Dutton, Crystal Ice and Coal Supply Co., Phoenix.

American Ice Company Report

THE annual report of the American Ice Company for the year ended December 31 shows net profit of $533,277, equal to $1.03 each on 416,235 common shares, compared with $655,920 or 98 cents each on 559,197 shares in 1948. Sales were $16,411,764, compared with 1948 sales of $18,176,079.

On the call for tenders of common stock May 9 last year the company purchased the 66,762 shares offered, at a cost of $582,837. The company now holds in its treasury 142,962 shares of the common stock acquired in 1949 at a total cost of $1,279,305, or an average of approximately $8.95 a share. With the termination of litigation in which the Supreme Court of New Jersey held there were no dividend arrears due on the preferred stock, the $155,803 deposited with the clerk of the court in connection with the suit was returned to the company.

Interpretation of Interstate Commerce

IN AN article on Court Decisions in the February issue of ICE AND REFRIGERATION, the case of Hollasch vs. Mountain Ice Co., is discussed with respect to the application of the Wage-Hour law to ice company operations and particularly to ice sales being classified in interstate commerce.

A further review of this lower Court ruling reveals that it did not represent the controlling law under the statute as existed prior to the new amendments adopted by Congress October 25, 1949, nor does it have any basis of application under the new Act, as amended.

Ice Company Sells Drinking Water

THE Stroud Ice Co., of Stroud, Okla., found source for additional revenue right in their own back yard. Stroud's city water has a high depree of hardness and too much salt to rate high as drinking water. The ice plant had to cut loose from the city mains and drill their own well to make good ice. They found plenty of soft water in a well on their own location and, since they have a surplus of water, they turned to selling drinking water. They will not only deliver it, but carry it in for customers. They are building up a big water trade and are giving some stiff competition to the municipally owned water system.

City Products Corporation Report

WILLIAM J. SINEK, president of City Products Corporation, has announced a net profit for that Corporation for the year 1949 of $5,396,948, or $4.29 per share, after allowing for $3,165,458 depreciation and $2,910,000 Federal Taxes. Net sales amounted to $72,824,813, the second largest net sales figure in the corporation's history.

The Corporation's sales of the past few years show a substantial increase when compared with the sales of 1940 when they totalled $25,688,000. This increase indicates the growth which has resulted from the diversification and expansion program entered into several years ago, a program which is being actively continued.

In the preceding year, net earnings were $5,705,947, or $4.52 per share on a total net sales of $78,508,500.

Decrease in 1949 sales as compared with 1948—the largest ever reported—occurred principally in the Ice and Coal Divisions due in part to a reduction in shipments of perishables occasioned by crop failures in the South and West and to a limited supply of coal as the result of mine strikes and other adverse conditions in that industry. Operation of the Ice Cream and Dairy Divisions was extended to a number of new areas during the year and the earnings of this division shows a substantial increase.

At the close of the year, cash and Government securities amounted to $12,226,834, an increase of $3,198,874 over 1948 year end. In addition, the Corporation had on hand $1,695,822 of United States Treasury Notes to provide in part for Federal Income Taxes on 1949 earnings.

Dividends of $2.50 per share were paid on the common stock during the year, continuing an unbroken dividend record of 56 years.

The change in the name of the company from "The City Ice & Fuel Company" to "City Products Corporation," approved at the stockholders' meeting in April of 1949, has received wide acceptance and is now firmly established.

The present spread of City Products Corporation, both as to products sold and areas covered continues to be an important factor in the strength and stability of the Corporation's business, the Corporation not being dependent on any product or any one area.

Mr. Sinek also reported that expenditures of $3,570,397 were made during the year for maintenance and repair of the Corporation's plants and equipment and as a result they are in good operating condition.

Paper Bags for Processed Ice

AN illustrated feature which appeared in the March issue on wet-strength paper bags reproduced photographs which were furnished by the Union Bag & Paper Corp., New York City. The pictures showed these bags being filled with sized ice and their use in food stores.

Ice Company Reports Earnings

NET earnings of the Merchants Ice & Cold Storage Co., Louisville, Ky., in 1949 amounted to $44,115. The year before, they were $87,602. Laurence W. Breed, president, said increased production costs were responsible for the decline in earnings.

Ice Man Heads Chamber of Commerce

JOE R. GRAMLING, president of the Arctic Ice, Plant City, Fla., was elected president of the East Hillsborough chamber of commerce for 1950 at an organization meeting of directors January 30. He was vice-president last year.

Reports From Unit Ice Associations

New Markets for Ice Outlined at 32nd Ohio Ice Convention

OPENING new markets for ice, selling ice and ice-using appliances, National legislation affecting the ice industry, and safety, were the major subjects discussed at the 32nd annual convention of the Ohio Association of Ice Industries held at Columbus, February 27 and 28.

New Market Opportunities

A vision of new market opportunities offering outlets for making up lost tonnage and increasing sales of ice was presented by C. P. Austin, director of the Research and Engineering Department of the National Association of Ice Industries.

Mr. Austin called attention to the fact that although there has been some shrinkage in ice tonnage from the war-time level, this levelling off had been expected. Under modern business trends, he said, they would have to realize that they were going to have to share with all competition some of the refrigerating business, and unless new markets and new outlets are created they will face a still bigger slump. This realization, he said, led the Research Department to a study of markets, and as a result some facts had been ascertained which, if put into effect, will result in greatly increased sales of ice. Among some of the new uses of ice that have been explored recently are: icing of vegetables grown locally; icing sweet corn for local market; and selling ice to mechanical owners.

Mr. Austin warned however, that all the research in the world will be worthless and will not sell a pound of ice unless the results of such research are put into practical use. The type of ice and the ice market ten years from now, he said, depends upon what ice companies are doing today. Research can open the doors to new markets but volume sales will depend solely upon what local ice companies do to follow through on the results of this research.

Now is the Time

David J. Copeland of Richmond Ky., in a dynamic address called atention to the necessity for adopting and putting through a practical merchandising and selling program. This is the 100th anniversary of the ice industry in America, he said, but the lack of interest shown in this event by ice companies generally causes one to wonder what the ice industry will be like a hundred years from now. Of one thing they could be sure, he assured, if ice is not merchandised and advertised on a continuing basis it will start and keep going down hill.

A very effective means of selling ice is through vending stations. These vendors, he said, can put ice where it should be, on Main Street, and experience has shown that people will buy ice when it is made available. He cited one instance of a vending station in Indiana which sold 752-25 lb. bags of prepared ice over one week end. Another Indiana ice company installed sixteen vendors in gas stations. His own company, Mr. Copeland said, had twenty-three in operation and expects to have fifty before the end of the year.

Mr. Copeland then explained in some detail a sales contest put on by his company very successfully last year and this same plan somewhat enlarged and amplified will be held again this year. Last year they sold slightly more than 1,000 ice-using appliances and this year they expect to sell 1500. Briefly their plans include three contests for all employes. The first runs from January 1 to March 31; the second from April 1 to June 30, and the third from July 1 to September 30. Prizes will be awarded the winners in each contest and, in addition, sweepstake prizes will be awarded covering all three contests. Another contest will be directed to students in the junior and senior high schools and surrounding rural area of Richmond in which prizes will be awarded for lists of users of manufactured ice.

New Officers for 1950

President, Jesse L. Glass, Middletown, Ohio

Vice-President, Stuart L. Muenter, Tiffin, Ohio

Secretary-treasurer, Guy W. Jacobs, Steubenville, Ohio

Directors: W. H. Adams, Dayton; Curtis M. Shetler, Canton; Dick Fischer, Akron; Frank P. Sedler, Cincinnati

Poultry — Another Market for Ice

A new market offered the ice industry in the use of ice for dressed poultry was presented by R. E. Grusendorf representative of Swift & Co., Chicago. Mr. Grusendorf illustrated his talk with a slide film showing pictures of processing plants, details of processing poultry, pictures of dressed poultry packed in crushed ice and packed in crushed ice in display cases in retail stores. In addition he showed a number of posters that will be used in retail outlets showing pictures of dressed poultry displayed on crushed ice.

Mr. Grusendorf asserted that something like a billion pounds of poultry will be processed this coming year and since it takes a pound of ice per pound of poultry for processing, and the same amount for display, simple arithmetic shows that here is a potential new market for two billion pounds or one million tons of ice.

National Legislation

William T. Jobe, general counsel of the National Association of Ice Industries, brought members of the convention up-to-date on National legislative activities. The Fair Labor Standards Act passed by the last Congress, he said, affects some segments of the ice industry much more than others, particularly in regard to minimum wage requirements which, in turn, is based upon whether the company is engaged in interstate commerce.

Under current interpretation, the ice business is a manufacturing business. As explained in a recent bulletin issued by the National Association under the title "White Collar Exemption", plans are now in progress for exemption of retail ice businesses from the interstate commerce provision. These exemptions passed the house but were not passed by the Senate. They provide that products, including ice, sold at retail, with some qualifications, are exempted. However, for this exemption to apply the concern must not be engaged nor closely related in interstate commerce. All sales of ice are considered retail sales except those that are sold for resale and 75 per cent of the total volume must be not for resale.

In this connection another point was raised as it applies

to car icing. Under present interpretation if a car-icing contract is made with one of the car-icing concerns, such sale is assumed to be for resale, and will be classed as interstate commerce, whereas if contract is made with the railroad it is assumed to be for use and is classed as not being in interstate commerce.

Safety Program

A report on the safety program of the association was presented by Gilbert E. Bush of Gallipolis, chairman of the Safety Committee. Mr. Bush said that twelve years work by the Ohio Association had reduced safety insurance premiums from $4.50 to 95 cents per $100.00 payroll. Emphasizing the necessity of safety work in industry, he said that in 1949 the number of industrial injuries was twenty one times the heaviest annual casualties in the World War. No company, he said, is too small for safety training. This is necessary, he said, not only for saving money but for preventing physical and mental suffering.

Following the procedure established some years ago, Mr. Bush awarded plaques to the winners in the three divisions of the 1949 contest as follows: Athens Ice and Storage, Athens; City Products Corp., Station 2, Cleveland; and the Smith Coal and Ice Co., Tiffin.

Mr. Bush was followed by James H. Fluker of the Industrial Commission of Ohio who amplified the necessity of conducting safety instruction in industry. No accident, he said, ever occurred without a cause, and it is necessary to find and eliminate such causes. Only constant work, he said, will reduce accidents and industry should have a special interest in this work because when accidents are reduced, rates will be lowered to correspond.

Convention Business

The convention was opened Monday morning by Harold J. Rolph, president of the Association. After visiting exhibitors had been introduced, a plaque was presented to Karl A. Beachy of Toledo for his service as president of the Association during 1948-49.

Another interesting opening event of the convention was an address by the Hon. James Rhodes, mayor of Columbus. Mayor Rhodes stressed the value of free speech, which is to be found only in America and said he was proud of the fact that under such free speech any citizen has a right to express his thoughts freely. Response to this address was made by Robert H. Smith of Willard.

In his annual president's report, Mr. Rolph said the association work consisted of so many intangibles that it would be impossible to list all the accomplishments. Deserving special mention, he said, was the work of the committees, the Legislative Committee which kept in close touch with the legislature and had succeeded in stopping or revising adverse legislation particularly pertaining to increased taxation; the Research Committee which had worked with Ohio University in uses of ice; the Technical and Engineering Committee which is developing a course of study in engineering for Ohio universities and colleges; the Safety Committee which has issued practical and valuable information on safety work; the Merchandising Committee which had encouraged and sponsored a two-day sales and merchandising conference and had exhibited ice appliances at the Ohio State Fair and at the Fruit Dealers Convention. Future plans of the association, he said, include development and promotion of new uses of ice, aggressive merchandising work, securing proper appliances and equipment to sell, training employees, and maintaining the product against all competition.

Guy W. Jacobs reporting as secretary-treasurer announced that the finances of the association are in good condition with a balance of $14,910.46. He stated that practically all ice companies in Ohio belonged to the Ohio as well as to the National Association.

Ice Marketing Institute

The first field course of the National Ice Marketing Institute given at Akron the week of February 6 was described by J. C. Wightman of Akron. Mr. Wightman said twenty-one students attended this course, made up of engineers, superintendents, route foremen and ice-appliance salesmen. He said that as the school went on, interest increased and it opened possibilities in the ice business of which most of them had never thought. The men who attended this course were given new knowledge and vision and information and were made sales-minded, he concluded.

Resolutions

E. E. Humes of Napoleon presented convention resolutions extending condolences to families of deceased members during the past year. Resolutions also extended thanks to the entertainment committee, to the speakers, to the officers and board of directors, to the exhibitors and to all others who had made the past year of the association and the convention a success.

The convention was brought to a fitting close with an address by James A. Hale of Columbus on "What It Means to be an American." Mr. Hale pointed out that too many Americans take America for granted, not realizing that it takes effort to keep and maintain our free government. He then recounted some impressions he had received while traveling in England, Spain, Italy and other European countries during the past summer. The outstanding impression one receives on such a trip, he said, is the lack of freedom among the people. Compared with what we have in America, they do not know the meaning of the word freedom, he concluded.

Eastern States Ice Association

By Samuel Freer, Secy.-Treas.

THE 18th annual convention of the Eastern States Ice Association will be held at Hotel Haddon Hall, Atlantic City, N. J., April 12-14, 1950. The program committee is now preparing a program that will be a real "bread and butter" presentation for every ice man attending.

An address will be presented on "It's Later Than You Think" by Frank W. Lovejoy of the Socony Vacuum Oil Co. A discussion on economical ice plant operation will be given by C. T. Baker, consulting engineer of Atlanta, Ga. An outstanding safety engineer will give a talk on safety in the production and distribution of ice. There will be two short talks by refrigerator manufacturers on selling and rental programs. Mount Taylor will be on hand to give his "Observations and Predictions." A dramatic skit will be given on ice cubes. A discussion will be presented on "Your New Ice Salesman—the Vending Machine."

A cross section survey has been made in the seven eastern states on the cost of production, delivery and the methods of delivery of sized ice and ice cubes. A presentation analysis of this survey will be made by an ice man who has had wide experience in merchandising sized ice and cubes.

The usual get-together party will be held Wednesday evening, April 12, from 6 to 7 p.m. The entertainment will be under the direction of Howard Lanin who arranged a fine entertainment last year.

Judging from early returns of exhibitors, there will be a complete sell-out of all exhibit space and this is expected to be one of the interesting features of the convention.

Michigan Ice Industries Association, Annual Convention

THE thirty-third annual convention of the Michigan Ice Industries Association was held at Grand Rapids, March 2 and 3, 1950. A good attendance, interesting and "meaty" business session, a good banquet and breakfast, a top-notch floor show by a fine group of entertainers from Chicago, dinner music accompanied by an excellent orchestra and above all, the opportunity to mingle and exchange ideas with their fellow ice men made this an outstanding annual meeting.

President Walter Hintz presented the subject of "Placing Ice on Main Street" in a masterful way, in which he brought forth the necessity of making ice available to customers the way they want it, when they want it, and where they want it, furnished in the form of crushed ice, sized ice, cubed ice, block ice. He particularly stressed the use of vending machines in this matter of merchandising ice.

Officers for 1950

President, Walter J. Hintz, Detroit
Vice-president, Joseph Oderman, Detroit
Vice-president, Ollie Webber, Flint
Secretary-treasurer, Edward Jackson, Kalamazoo
Directors: Bert Blackmer, Muskegon; George Steers, Kalamazoo; Leonard Borin, Detroit; Vernon Powell, Cadillac; Wesley Brown, Benton Harbor.

Research Uncovers Markets

A report on what is being done by the Research Department of the National Association of Ice Industries was made by C. P. Austin, Research Director. He pointed out various markets for ice that were discovered through research, and the manner in which they should be taken care of to make profitable outlets for more ice.

Robert E. Grusendorf of the Dairy and Poultry Department, Swift & Co., presented a very informative and interesting talk on "A New Market for Two Billion Pounds of Ice—Poultry." He set forth the use of ice in shipping dressed poultry by truck any distance, in a safe manner. This was followed by a fifteen minute sound film illustrating such uses. Truly an important new use for ice, involving considerable tonnage, which ice distributors will do well to investigate.

A program of "Selling Vegetable Ice and Keeping it Sold" was presented by Robert B. Hargie, Kalamazoo, Mich. "Not only is it necessary to sell the idea effectively to both retailer and wholesaler," said Mr. Hargie, "but you must be close enough to the retailer to promptly take care of any problems which may arise, in order to keep him sold and happy."

Operating Economies

Richard George, Muskegon, presented the problem of "Economizing in the Ice Plant" from an engineer's standpoint. Mr. George is engineer for the Mona Lake Ice Company and is well qualified to present some of the economies possible in the operation of an ice plant, which he did very effectively, illustrated by various charts.

A Safety Program Will Pay Off, was ably presented by C. A. Guenther, Lansing Ice & Fuel Company, Lansing, in which he outlined the successful program of safety operated by his company. This is done through regular meetings of the personnel, premiums for no accident records, pictures, speakers and accident prevention schools. Their accident frequency record has declined greatly since the end of the war through the use of this program.

Guy W. Jacobs, Director of Public Relations Department, National Association of Ice Industries, presented the scope of the advertising program for 1950, on a national scale as well as aids to local advertising. He pointed out that the tools are available from the National Association to improve local ice business, such as sound films for sales and service, driver training course, ice marketing bulletins, safety and accident programs, National Ice Marketing Institute. This thought was left with the convention—"Research Gets the Facts—Advertising Tells the World About Them."

Advertising Support in Michigan

Albert H. Blackmer, Muskegon, who is Michigan chairman for the National Ice Public Relations, reported on the progress to date in support of this program. The report shows that Michigan is lagging much in this matter, mainly because a surprising number of members have neglected to send in their subscription card. The commitments for this advertising have to be made at least four months in advance, so it is necessary that subscriptions be in early in order that the committee may know what funds they will have for the 1950 campaign. This program is vital to the ice business and should receive immediate attention.

Now Is the Time

Now is the time, according to David J. Copeland, president, Indiana Association of Ice Industries, when ice men must decide how many uses of ice they will go out after. They must decide now whether they will consistently support the Advertising and Public Relations program of the ice industry. They must decide what they are going to do about the new market for ice which vending stations develop quickly and profitably. They must decide now whether they are going to do a real merchandising job so as to build for the future. Now is the time, he concluded, for ice men everywhere to get going, before it is too late.

A sound film from the Department of Agriculture entitled "Retailing Fish" was shown. This film illustrated another important market for ice—the preservation of fresh fish from the time they are caught at sea until delivery to the consumer.

Kansas Association of Ice Industries

By C. A. BERKIHISER, Secretary

THE thirty-second annual convention of the Kansas Association of Ice Industries was held in Wichita, Kansas, March 27 and 28. There were talks by seasoned ice men on phases of the ice business that were valuable to all progressive ice men. One important session was devoted to the Merchandising Forum and another session for the plant engineers, both of which presented a lot of valuable information. The association has more Associate members this year than ever before and this made it possible to present a very good display of exhibits.

Ice tonnage for Kansas this winter is running about the same as last winter but there is a renewed interest in the ice business and merchandising methods are being revamped and with more drive being put into the ice business, Kansas will have a better ice year in 1950 than 1949.

55th Indiana Ice Convention Looks Toward "50% More in '50"

THE 55th annual convention of the Indiana Association of Ice Industries was held at the Lincoln Hotel, Indianapolis, Wednesday and Thursday, March 7 and 8. The convention had as its slogan "50% More in '50" and this slogan fairly represented the spirit of the program. It not only pointed to the need for more sales of ice but came down to earth and told how, with specific directions and examples.

Subjects covered a considerable range, most of which were concerned with bigger and newer markets for ice and ice appliances. Some of the avenues suggested were practical use of the results of research, selling ice for packing and displaying dressed poultry, renting domestic and commercial refrigerators, vending stations, making ice attractive to the homemaker, teaching employes how to sell, demonstrating vegetable icing, the use of ice for sweet corn and other fresh produce.

Indiana Officers for 1950

President, C. D. Knight, Jeffersonville, Ind.
Vice-president, O. R. Crosier, Connersville, Ind.
Vice-president, J. R. Jones, Oakland City, Ind.
Treasurer, A. C. Lemons, South Bend, Ind.
Executive Secretary, Robert W. Walton, Indianapolis, Ind.

New officers Indiana Association of Ice Industries: J. R. Jones, vice-president; Robt. Walton, executive secretary; C. D. Knight, president; A. C. Lemons, treasurer.

The exhibits, always a point of interest at Indiana conventions, came up to their usual standard with displays of refrigerators, uniforms and other equipment and supplies.

Those who have been attending Indiana conventions for some years felt a note of sadness in the absence of "Uncle Billy" Martin and Secretary "Ollie" Fauchier, whose deaths occurred within the last year. Tributes to their memories were expressed during the convention.

The registration desk opened at noon Monday and early registrants took advantage that afternoon of the opportunity to look over the exhibits. Monday evening a representative group of Indiana ice men and their wives and the exhibitors enjoyed the annual get-together party held in the Travertine Room of the hotel. The annual banquet was held Tuesday evening, with an entertaining floor show following.

Opening Session

The first session was held Tuesday morning, opened by President David Copeland. After last season, Mr. Copeland said, many ice men feel that they have a right to be discouraged. But looking forward to 1950, he reminded them that the ice business still is here, and if proper efforts are made, sales can be brought up to what they should be. Research, he said, has opened new markets with a potentiality of about five million tons of ice sales per year.

Mr. Copeland also talked on selling refrigerators and employee training. These employees can and will sell ice-using appliances if they are interested. As a means of encouraging their interest, he suggested the use of a sales contest such as his own company is putting on this year. He advised them all to make up their minds that ice is a good business and will continue to be a good business as long as they work to make it so. The ice business, he concluded, is worth fighting for.

Report of Secretary

The secretary's report covering association work was presented by Robert W. Walton. Among the accomplishments last year were organization of the Indiana Ice Merchandising Forum; presenting an employee training program through the Distributive Education Department of Indiana University; research in the use of ice for sweet corn; meetings of Indiana ice executives to familiarize them with means available to help them merchandise the ice business. The annual ice exhibit at the Indiana State Fair was not shown this year. Instead work was directed along the line of getting all ice possible into the horticultural exhibits, most of which are perishable, and this was very successful. In addition an exhibit was presented on refrigeration for 4H Clubs of the state. An exhibit will be shown at the Indiana State Fruit Fair later this spring and an exhibit will be shown at the Purdue Horticulture show.

Making Markets and Keeping Them

C. P. Austin, director of the Research and Engineering Department, National Association of Ice Industries pointed out the value and practical results of research. The research program of the National Association, he said, tries to look ahead, mostly to develop new markets for ice and this work has been very successful. The results of this work, however, Mr. Austin said, depend on what the individual ice companies do to use the facilities and information that is provided. One of the big markets opened by this research was the sale of processed ice to mechanical owners. This study showed that if ice, like other food products, is made available where people want it, the industry will be able to serve millions of customers, new customers, who will pay a good price for it.

Speaker at the luncheon session Tuesday was the Hon. Henry Schricker, governor of Indiana. Governor Schricker told about the administration of the state government of Indiana, the size and volume of the business transacted, the details and some of the responsibilities and duties of those charged with its administration.

Ice for Dressed Poultry

R. C. Miller of Swift & Company told about the Swift program of marketing and advertising dressed poultry in which ice plays a large part in the marketing and retail display. Mr. Miller explained that under the old method of cooling poultry in dry air, it took fifteen to eighteen hours to cool but with ice and cold water, it is done in less than two hours. Using this process, the usual procedure is

to do the processing one day and deliver it to the retail market the next day. His talk was illustrated with a slide film prepared for the purpose of educating dealers and ice men. This film showed displays in the retail markets, processing in the packing plant and the method of using ice for both processing and display.

Ice Merchandising Forum

An ice merchandising forum conducted by Charles Scheidler of Greensberg covered discussion of rental plans for refrigerators and vending stations.

A rental plan for both domestic and commercial ice refrigerators recently installed by his company, was described by Leland Lusk of the Daniel De Prez Manufacturing Co., Shelbyville. A rental plan for domestic refrigerators is available at a cost of an installation charge and a stated sum per month, which includes a financing charge, ice service, and payments on the refrigerator and at the end of about five years, the customer will own the refrigerator. Commercial refrigerators likewise will be rented for an installation charge and weekly payments and cost of ice at 50 cents per 100 lbs. In the case of commercial refrigerators, the customer is given title to the equipment in about three years, the exact time depending upon the original cost of the refrigerator.

ice business without analyzing it in relation to other businesses, such as the solid fuel business, retail lumber yards, and others which have gone through more drastic changes than the ice business. Ice is still very much in the picture because for some purposes it furnishes refrigeration that is not available from any other. But it does have many conditions that need to be improved. For instance it is still inconvenient for the customer to have to wait for the ice service man.

Mr. Steers offered a practical plan of operation which ice men can use to improve and hold their business. Have confidence in the future, he said; have knowledge of your own business; learn what others are doing; plan for the future and have an objective; make the public want your service by keeping in contact with your customers and others; survey your market to know where refrigeration is needed and what kind of refrigeration is needed; sell ice-using equipment through displays and salesmen; have various sales plans that will meet the needs of your customers including cash, time and rental. Ice chests for commercial outlets offer opportunities for sales of crushed ice. Every commercial outlet needs such a storage place and these include vegetable cases, water coolers and beverage chests. Manufacturing plants are especially good customers for water coolers.

Past presidents, Indiana Association of Ice Industries: Robt. Ramsey, Lafayette; H. R. Dailey, New Castle; John C. De Prez, Shelbyville; Chas. Newell, Kokomo; Leonard Swartz, Indianapolis; Chas. Scheidler, Shelbyville; A. C. Lemons, South Bend; Edw. Lowenthal, Evansville.

Charles Brock, a grocer in Connorsville, gave a short unscheduled talk on the use of ice for fresh vegetables. Mr. Brock has had a vegetable ice counter in his store for some months and is highly pleased with its service. Produce is the backbone of the retail food business he said, and it offers a chance to make more money than any other part of the business. He likes the use of ice for produce because it keeps it attractive and fresh and he can sell more at a better price. He installed a case in his store three months ago and he expects to have it paid for at the end of six months.

Leonard L. Swartz of Indianapolis gave a short practical talk on selling ice through vending stations. Mr. Swartz has had a number of vending stations in operation and is installing more. He says he is thoroughly sold on this method of selling ice. The recent National ice survey, he recalled, showed that 48 percent of mechanical refrigerator owners are now buying ice and 50 percent of these want to buy it in the evening. For them, therefore, he said, a vending machine is a natural outlet. There is a big untouched market for ice if ice will be made available for those who want to buy it.

Your Ice Business and Mine

One of the leading talks was presented by George Steers, Kalamazoo, Mich., covering a general discussion of merchandising opportunities in the ice business. Too many ice men, he said, are discouraged in regard to the future of the

Selling Extra Ice to the Homemaker

A talk and demonstration on selling extra ice to the homemaker was given by Mrs. Harriet Gray, Polar Ice & Fuel, Indianapolis. Mrs. Gray explained and showed how to use ice in various ways for table decorations and at parties including artificial flowers chilled with ice, salad bowls, punch bowls, ice molds for drinks. These ways of using ice appeal to women Mrs. Gray said and indirectly help to sell more ice. Such a demonstration and talk can be arranged for women's clubs or other meetings of women and always prove very interesting.

Sales Training for Service Men

A report on the sales program for Indiana ice service men presented by the Distributive Education Department of Indiana University in cooperation with the Indiana Ice Association was presented by G. Elwood Hookey. Mr. Hookey told about the organization of the training course which has already been presented at Jeffersonville, Madison, Princeton, Greensberg, Vincennes, Terra Haute, Irvington, Lafayette and Bloomington.

His contact with these men, he said, showed that there are good men, conscientious, and are trying to do a good job but need more information on how to sell. It is a buyer's market now and customers in all lines demand service and they will get it "or else." The old method of ice serv-

ice, he said, is passing out of the picture and if the service men do not know how to sell service, their customers will continue to quit using ice.

The training program with which Mr. Hookey is engaged in conducting will be made available to all ice companies in the state and he said they were accomplishing the result for which the work was organized.

Management and Sales

Dan Prager, director of the Personnel Training and Marketing Department, National Association of Ice Industries, pinch-hitting for Mount Taylor who was unable to be present because of illness, spoke on the subject "Management Needs Sales and Sales Need Management." The need for ice must be created, Mr. Prager said, because people do not buy it of their own accord. The ice business, he said, is not so much a manufacturing as a retail business and this means that good salesmanship is necessary. Decrease in ice sales is not alarming if ice managers know that they are slipping, but it is alarming if they do not realize the necessity of becoming familiar with merchandising and sales management with respect to selling ice and ice-using appliances.

Fresh Produce and Merchandising

A description of the research work and some of its results being done at Purdue University in cooperation with the Indiana Ice Association was described by J. S. Vandemark of Purdue University. Mr. Vandemark described the work in sweet corn icing started in 1949 which has developed into use of ice for sweet corn as an established practice. This process requires approximately one ton per acre. Since about 2,000 acres in Indiana are devoted to the growing of sweet corn, there is a market for about 2,000 tons of ice in Indiana alone. During their study of this project, it was noted that growers accept the idea with considerable enthusiasm but it has taken some efforts to educate produce buyers because they were not thoroughly familiar with the results. When they were shown by actual demonstration that sweet corn keeps in better condition and fresh longer with the use of ice, they also accepted the new idea.

This study showed that there is a peak demand for sweet corn over the week end, and since it must be harvested when ripe, grocers have an over-supply on their hands during midweek and over the week end dealers sometimes run short. Based on this, Mr. Vandemark said a future study will be made to determine how long corn can be kept when iced with the possibility that when harvested during the first part of the week it could be held for the market until the following week end.

Educating Produce Retailers

As a means of educating produce retailers in proper display and sales methods, Purdue University in cooperation with the Indiana Association, some months ago constructed a demonstration trailer which has been touring Indiana cities and giving instructions to produce retailers on this subject. The trailer has space in which produce is properly displayed with the use of crushed ice described and demonstrated. The methods and procedures of using this equipment was described by Eric Oesterle of the Purdue University staff who has had charge of the trailer.

Discussion of this subject was continued by A. W. Compton of the Kroger Grocery Co., Chicago, who talked on the role of ice in marketing fresh produce. Mr. Compton said that ice is a necessity in modern food stores for selling produce which includes meat, fish, and other perishables. The Kroger Stores, he said, are not able to buy all the iced sweet corn they can sell. And many other kinds of produce such as watermelon need to be displayed on beds of crushed ice in order to retain their freshness and build up their sales appeal. Ice, he said, keeps such produce longer and in better condition than any other kind of refrigeration.

Continuing this subject, E. D. Mallison of the Atlantic Commission Co., New York, reiterated much of what Mr. Compton had said. An important step has been taken in Indiana in tieing in the grocers with the retailers. Growers too often are apt to lose interest in what happens to their produce after they have sold it and if an entire industry can be tied together from grower to consumer, as in the case of the sweet corn industry in Indiana, he felt that it was a great step forward and would bring excellent results in selling more ice.

Directors Elected

Revision of the by-laws of the association presented and adopted at the convention made it necessary to elect an entirely new board of directors, consisting of twelve members. These were presented by the nominating committee and elected as follows:

To serve one year: David Barnes, Gary; Robt. A. Yonker, Madison; Robert Seaton, Richmond; Frank Callahan, Fort Wayne.

To serve two years: Edw. Lowenthal, Evansville; Leonard Swartz, Indianapolis; Harold R. Dailey, New Castle; Chas. Scheidler, Greensburg.

To serve three years: H. L. Dithmer, Indianapolis; John C. De Prez, Shelbyville; Robert Ramsey, Lafayette; Clarence Liggett, Attica.

Illinois Association of Ice Industries

By Wm. D. Wright, Secretary

THE meeting of the Illinois Merchandise Council, held at the Rogers Hotel, Bloomington, Ill., March 12 was exceptionally well attended, which encourages us to believe there is new activity and interest in more companies toward a plan of training and merchandising. This is good news because the industry as a whole has not recovered from the effects of the war, lack of competent manpower and an almost total lack of effort toward training and merchandising. Many new men were present and the discussion on ways and means of getting more equipment out this season was very stimulating.

The entire morning session was devoted to discussion. In the afternoon there appeared before the group, Professor John Hancock, a psychologist attached to the Illinois State Normal School, Normal, Ill., who lectured on the subject "Human Behavior." He developed many good points on why humans behave as they do, and suggested methods salesmen can use to interest prospects, finally resulting in the sale of the article or service being promoted. Altogether it was a most interesting and profitable meeting. It was decided that the next meeting of the Merchandising Council will be held the second Sunday in June, the place to be announced later.

Missouri Ice Manufacturers Association

By V. A. Esphorst, Secy.-Treas.

THE spring meeting of the Missouri Ice Manufacturers Association Merchandising Forum will be held Tuesday, April 11 at the Missouri Hotel in Jefferson City, Mo. Many subjects of vital interest to the ice men of Missouri will be discussed at this meeting. Some of these are: Swift's program of icing poultry; rental of ice using equipment; ice vending equipment and training of employees. All ice men of Missouri are invited to attend this meeting.

North Carolina Ice Association 41st Annual Convention

THE forty-first annual convention of the North Carolina Ice Association, held in Raleigh March 6 and 7, was one of the most successful in the long history of the group.

A feature address, or rather report, of the convention, was "The History of Our Association," given by Lawrence Rose of Wilmington. It was interesting to those attending to learn through the reading of extracts from the minutes of the first five annual meetings of the Association, held almost half a century ago, that the main topic of consideration was "ruinous price cutting." It was also disclosed that when the Association was first formed 42 years ago there were only 28 ice manufacturers in North Carolina, and that within 60 days after formation all 28 had signed up as active members.

D. M. Howell of Greensboro was elected new president to succeed W. Harold Sherrill; Paul Harris of Laurinburg vice president to succeed Howell, elevated from the vice presidency; and Lewis H. Powell of Raleigh was re-elected secretary-treasurer to serve his 13th consecutive term in that office.

The following Executive Committee was also elected: L. G. Geddie, Mount Olive; E. J. Jeffress, Goldsboro; E. L. Lowie, Gastonia; J. H. McGill, Charlotte; W. H. Sherill, Hickory; George Sherrod, Greensboro; and R. V. Sisk, Charlotte.

100th Anniversary Observed

"No industry in the long history of civilization has contributed more to mankind in the fields of health and comfort than has the ice industry," Dr. Clyde A. Erwin, North Carolina State Superintendent of Education, told the ice men in a ceremony in observance of the 100th anniversary om commercial ice manufacturing. "Your Industry's place in our economic life is an honored one," he added, "and I am confident that the same vision that has given it this honored place will bring solution to the problems facing you today."

William T. Jobe, National Association of Ice Industries, Washington, and Charles L. Henry, assistant vice president of the Atlantic Company, Atlanta, Ga., delivered off-the-record-behind-closed-doors talks of specific problems of the moment. Their formal subject was "A New Look at an Old Subject", and the ice men, after it was over, felt, as one put it, "the trip to Raleigh was sure worth it."

Business sessions included a talk by C. A. Dillon, Jr., of Raleigh on "Your Customer is Your Business." The "Application of Industrial Engineering Principles to Accident Control" was the subject of A. L. Bechtold, public relations director of Lance, Inc., of Charlotte.

Building Better Business

A series of short talks on "Act Today for Success Tomorrow"—depicting what ingenuity and imagination in sales will accomplish—was led by J. Henry McGill, of Charlotte. Participating in this feature were J. K. Bray of Mount Airy, L. D. Gore of Morehead City, T. E. Motlow of Lexington, M. H. Hoyle of Cherryville, and George S. Sherrod of Greensboro.

A special "wives" luncheon was a feature of the first day of the Convention. Mrs. Sherrill, wife of the president, presided. A short talk on "Home Demonstration Work is Adult Education in Action" was given by Miss Ruth Current, director of Home Demonstration Work, North Carolina State College.

The annual banquet, a sell-out, had as its master of ceremonies Carl Goerch, Raleigh editor and radio commentator. It was followed by an entertainment program and dance.

Representatives of about a score of companies holding associate memberships in the association attended.

Three big mass-chuckles grew out of the convention: the first when reading of records more than 40 years old disclosed "ruinous price cutting" was a serious problem way back then; second when the local press reported that Secretary-Treasurer Powell had successfully dodged the jinx of "13" by being reelected; and third when four times out of eight drawings for attendance prizes those drawing a number out of a hat drew their own names. "It's just downright funny what can and does happen to ice folks," an oldtimer drawled.

Canadian Association of Ice Industries

By MILDRED E. CROFT, Secretary

FOR the first time ice refrigerators were on display at the Coliseum at Toronto, along with an extensive exhibit of new and attractively designed furniture. The Sanderson-Harold Co. is to be congratulated on the fine set up of a kitchen in which their refrigerator was on display. The Renfrew Co. showed a very excellent grouping of their newest models. They attracted a good deal of favorable comment. Those interested in the ice business felt it was a good step forward in the prestige and place of the ice refrigerator in the home.

The Seal of Approval for approved refrigerators is being revived at the request of the refrigerator manufacturers. It would of course apply only when the required specifications had been complied with in the construction and actual operation of a refrigerator. The object is to give encouragement to efficiency, reliability and good appearance in the better type of ice refrigerators.

The Canadian Ice Foundation 1950 National Advertising campaign is under way. The February issue of Chatelaine, the March issue of Canadian Home Journal and I.O.D.E. Echoes carry an outstanding message in quarter page space—"A Salute—to thousands of housewives who keep food costs down with all-year-round Ice Service." A large panel in this advertisement headed "Don't go short of Ice for parties!" promotes ice cube and sized ice service to all householders no matter what type of refrigerator they have.

Coming soon is the all-out National Ice Refrigerator Week April 17-22. Advertisements will appear in a large list of magazines in addition to the rotogravure sections of week-end papers. Widespread ice dealer activity, direct co-operation is being developed with furniture, hardware, appliance and department stores throughout Canada, for which trade papers and direct mail is being used.

Mountain States Association of Ice Industries

By J. REIMER ESPY, Secretary

THE annual convention of the Mountain States Association of Ice Industries is scheduled for April 27 and 28 at the Plains Hotel, Cheyenne, Wyo. This is the first time in twenty years that this association has met in Cheyenne, and from all reports at this early date, it is expected that this will eclipse the last convention in all respects. Everyone always has a good time in Cheyenne.

The engineers conference which has been a part of the last two conventions will again have a prominent place in the program, and it is expected that most of the companies will have their best engineer present. Merchandising and personnel will also come in for attention and it is hoped that the year 1950 will see this activity well out in front with practical merchandising ideas.

Southwestern Ice Manufacturers' Association

By P. A. WEATHERRED, Secretary-Counsel

THE Southwestern Ice Manufacturers' Association has moved into another very active year. The 1950 calendar of Association activities includes the following:

Ice Merchandising Short Course

The Ice Merchandising Short Course conducted at A & M. College during the week of January 8, 1950 was attended by eighty managers and supervisors from member companies. The course followed fairly closely the text prepared for field use by the National Association of Ice Industries. The major topics were: Building the sales organization, increasing sales through supervision, increasing sales through training, and merchandising.

Those attending were divided into four conference groups of around twenty each, and each conference period was of one and one-half hours' duration. The instructors were selected from the Industrial Extension Department of A. & M. College and from managers and supervisors of ice properties who had attended the National Ice Marketing Institute course at Washington. The training was well received and the course will be repeated at A. & M. College of Texas during the week beginning March 18, 1951.

The Merchandising Short Course was worked out and directed by the Merchandising Committee of which Howard Campbell of the Southland Corporation, Dallas, is chairman.

Short Course for Ice Plant Engineers

The Engineers' Short Course was repeated again this year at A. & M. College during the week beginning January 22, 1950. The course was attended by fifty engineers from member companies, and the instructional staff was the same as for the 1949 course.

These instructors and the subjects presented by them were the following: J. F. Moss, Fundamentals of Refrigeration; Ralph H. Irvine, Water Treatment for Ice Manufacturing; C. E. Hays, Treating Water for the Manufacture of Ice; Jacob M. Irvine, Efficient Operation of Ice Manufacturing Plants; Obert K. Irvine, Efficient Operation of Condensers and Cooling Tower, Power, etc.; W. C. Durrant, Keeping and Using Log Sheets; L. P. Reiss, Sanitation in Ice Manufacturing Plants, Good Housekeeping in Ice Manufacturing Plants, Accident Prevention; R. A. O'Neill, Purposes of Fundamental Pieces of Equipment in Ice Manufacturing.

The Engineers' Short Course has become an established Association activity and will be repeated in 1951 during the week beginning January 21. Again this year, this course was prepared and directed by the Technical Committee of the Association of which Ralph H. Irvine, Southern Properties, Inc., Palestine, Texas, is the chairman.

Spring Sales and Service Conference

The Spring Sales and Service Conference was held again on March 16 and 17 at the Roosevelt Hotel in Waco. As this was written, the conference was still ahead, but a good attendance was expected.

The subjects for the conference, together with the conference leaders, were the following: H. D Bearden (Industrial Extension Service A. & M. College), The Supervisor, His Problems and His Technique; Frank Alderdice, Building the Sales Organization; J. L. Tiner, Practical Methods in Meeting the Responsibility of the Supervisor in Todays' Ice Operation; J. C. Hawkins (Swift & Company, Waco), The New Market For Ice—Swift & Company Poultry Program; E. L. Williams (Director, Industrial Extension Service, A. & M. College), Sound Methods of Industrial Training; John E. Carroll, Practical Methods in Sales and Service Training for Ice Routemen; Bill Eason and Leroy E. Leak, What the Hell's the Matter with Ice Service; Edd Reeder, Building Ice Business in Today's Changing Ice Market—Your Commercial and Your Domestic Customers of Today and Tomorrow—Lecture and Floor Discussion; Harry M. Park, Review of Today's Ice Market and Today's Opportunities.

The Conference was planned and directed by the Merchandising Committee of which Howard Campbell of Dallas is Chairman.

Management Conference

The Management Conference will be held again this year at the Commodore Perry Hotel in Austin, May 4 and 5, 1950. This conference is limited to owners and major executives of member companies. Its program and discussions are off-the-record and deal with matters of direct interest to those responsible for ice investments. It will be under the direction of the Management Committee, of which Elmo McGee of Lone Star Ice Delivery, San Antonio, is the Chairman.

Fall Conference of Engineers

The Fall Conference of Engineers will be held at the Driskill Hotel in Austin on October 18 and 19, 1950. This conference will be under the direction of the Technical Committee, of which Ralph H. Irvine of Palestine is chairman.

Annual Convention

The 1950 convention of the Association will not be held in 1950, but the next convention will be in Galveston February 14, 15 and 16, 1951. For a great many years the Southwestern Association has held its convention during early dates in December. Thus, the conventions were held shortly after the National Convention and just prior to the Christmas holiday season. The dates conflicted with hunting season, with holiday preparations and other activities in the ice industry; consequently, the opinion finally crystallized that the dates should be set up to February, thus relieving pressure and conflicts brought about by the December dates. Argument was also made that the convention should deal with the seasons that lie ahead, rather than with those that have passed. Thus, one of the Southwestern's traditional practices has been radically changed.

The Board of Directors of the Association held its regular annual meeting on January 19, and during the year, it will hold two more meetings—on May 19 and September 7. Interim meetings will be held by what is called The General Policies Committee, which is composed of the officers of the Association, but which is, in effect, an executive committee with authority to deal with Association affairs between meetings of the Board of Directors.

The 1950 Ice Season

It is too early to predict what character of season Texas ice men will experience, but confidence is broad that this season will be as good, or better, than was that of 1949. This is probably nothing more than the ice man's hunch but nevertheless that is the feeling.

Interest on the part of the present members of the industry is centered on building business in the markets that afford opportunities for offsetting inevitable losses to the competition. The markets receiving most interest and attention are those for sized or crushed ice for vegetable icing and in the icing of poultry and fish at the retail levels. Response has been excellent to the program being inaugurated by Swift and Company for the icing of poultry. Crushed or sized ice in paper bags, sold to cash-and-carry trade is another source of a great deal of interest and this market has shown a remarkable increase.

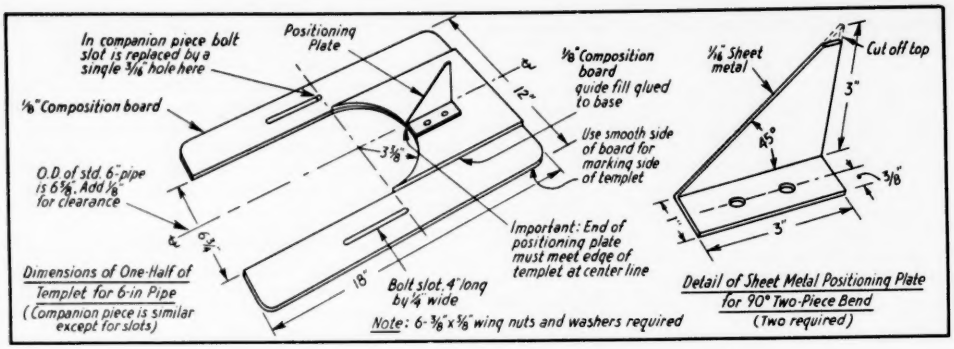

In companion piece bolt slot is replaced by a single 3/16" hole here
Positioning Plate
1/8" Composition board
1/8" Composition board guide fill glued to base
12"
Use smooth side of board for marking side of templet
3 1/8"
O.D of std. 6" pipe is 6 5/8". Add 1/8" for clearance
6 3/4"
Important: End of positioning plate must meet edge of templet at center line
18"
Bolt slot 4" long by 1/4" wide
Note: 6-3/8" x 5/8" wing nuts and washers required
Dimensions of One-Half of Templet for 6-in Pipe
(Companion piece is similar except for slots)
1/16" Sheet metal
Cut off top
3"
45°
3/8"
3"
Detail of Sheet Metal Positioning Plate for 90° Two-Piece Bend
(Two required)

Fig. 1—Details of templet for 90 deg. bend in 6 in. pipe.

Templet Saves Time in Making Pipe Bends

WHEN you work with pipe regularly, it will probably pay you to make templets to lay out the bends. A templet like this will cut to a matter of minutes the accurate marking of pipe for bends of practically any angle and any number of pieces. There are no difficult formulas to figure or complicated patterns or layouts to make. First you figure

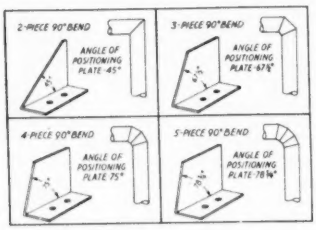

2-PIECE 90° BEND
ANGLE OF POSITIONING PLATE 45°
3-PIECE 90° BEND
ANGLE OF POSITIONING PLATE 67½°
4-PIECE 90° BEND
ANGLE OF POSITIONING PLATE 75°
5-PIECE 90° BEND
ANGLE OF POSITIONING PLATE 78¾°

Fig. 2—Parts of the templet and the templet assembled.

out the angle of the bend and number of pieces. Then the templet is simply slipped over the pipe, positioned, and the line of cut marked off with chalk or a soapstone.

The templet consists of two pieces of composition board (you could use masonite or plywood) that have cutouts to fit snugly around the pipe. When closed the cutouts form a circle that is the same diameter as that of the pipe. When opened, the templet can be tilted and made snug to the pipe at almost any angle. The layout for the cut is made by chalking the pipe around the templets.

While the sketch in Fig. 1 shows a templet that is made for a 6 in. pipe, you can make templets for pipe of any diameter the same way. Just add 1/8 in. to the outside diameter for clearance. If you find yourself working with pipe of two or three different diameters regularly, make a templet for each size.

Construction Details

Fig. 1 shows construction details of the templet for making 90 deg. two-piece bends in 6 in. diameter pipe. You can make templets for other size pipe by increasing or decreasing the dimensions of the cutout. For other angles of cut, make additional positioning plates as shown in Fig. 3. Fig. 2 (top), shows parts of the templet (bottom). Here the templet is assembled. Dotted lines show the position of the sheets when the templet is closed.

Fig. 3 shows the angles of the positioning plates for making four types of 90 deg. bends. Similar plates can be made for odd angles. The first step is to mark the center line on the pipe as shown in Fig. 4. Block the pipe and with a square and level

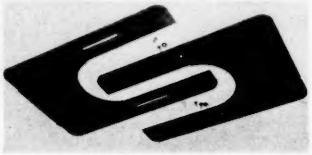


Fig. 3—Positioning plates for four types of 90 deg. bends.

mark the center of the pipe. Without moving the pipe, make several other marks further along the pipe. Then draw a line through these points. This is the center line.

90 Degree Angle

To make a 90 deg. angle, snug the templet to the pipe with the positioning plate lying flat on the pipe along the center line as the illustration below shows. Then tighten the setscrews. Then hold the templet steady and layout the cut around the pipe by sliding a flat soapstone along the templet surface.—LINDE AIR PRODUCTS CO.

How to Cut, Bevel, and Weld the Pipe (1) First mark the center line of the pipe. (2) Snug the templet to the pipe. (3) Next, the pipe must be cut. Make a miter cut by holding the blowpipe in the same position as you would a saw. (4) Now bevel the ends to form a vee for welding. Hold the blowpipe at an angle of about 30 to 45 deg. and move it toward you. (5) Rotate one section of the pipe 180 deg. Then make the weld. Melt both edges of the pipe all the way to the inside wall—Photos furnished by Linde Air Products Co

The Practical Refrigerating Engineer

Reg. U. S. Patent Office

OPERATING • MAINTENANCE • NEWS
QUESTIONS AND ANSWERS

National Association Practical Refrigerating Engineers

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How Modernizing Paid Off in Ice and Cold Storage Plant

By James Oldani

Chief Engineer, Central Illinois Ice Co.

Springfield, Ill.

ONE of our plants in Springfield, Ill., has a 720 can ice tank and storage space totaling a little more than 300,000 cu ft. For some years before the war the ice making side was not operated consistently. Then the demand for ice increased but the output was not satisfactory and the power consumption was high.

It was necessary to make the best of the situation until a modernization program could be planned and carried out. The details of the original plant equipment and arrangement are given in Tables I and II. The ice freezing tank had 720 cans of the 300 lb. 11½ by 22½ in. size. Tank piping was arranged in 26 stands of 1¼ in. coils, 10 pipes high—66 ft. long. These coils were connected into two banks of 13 coils each.

TABLE I—ORIGINAL STORAGE SPACE

4 Coolers	12′ x 18′ x 12′	32 to 38 F	11 Coolers 106,568 cu. ft.
4 Coolers	15′ x 20′ x 12′	32 to 38 F	
1 Cooler	10′ x 40′ x 12′	32 to 38 F	
2 Coolers	40′ x 80′ x 12′	32 to 34 F	
1 Ice Storage	100′ x 80′ x 22′	at 28 F	176,000 cu. ft.
1 Freezer	40′ x 80′ x 12′	0 to −10 F	38,400 cu. ft.
	Total		320,968 cu. ft.

It was always a problem to keep the suction pressure up in this plant. We did everything imaginable in an effort to locate the trouble. It became evident that there was a bottle-neck in the suction main to the compressors. This appeared to be a 4 in. line of uniform size its full length because the insulation had the same outside diameter. We were lucky to locate a section of the main which was 2½ in. pipe by using an ice pick to measure the thickness of the insulation every two feet. When the insulation was removed, the reduced section was revealed. Naturally, after locating this trap and replacing the 2½ in. section with 4 in. pipe we expected the operation would be improved. But the plant continued to operate at the same 22 lb. suction pressure as before and no real change was evident.

TABLE I—COMPRESSOR DISPLACEMENT AND SERVICE

Compressor	Service	Rpm	Cu. In./Min.
8 x 8	ice tank & storage	160	128,688
8 x 8	ice tank & storage	160	128,688
9 x 9	ice tank & storage	160	183,216
9 x 9	ice tank & storage	257	294,290
6 x 6	freezer & coolers	368	124,862
Total displacement per minute		859,744 cu. in.	

Presented to the 40th Annual Convention, NAPRE.

Testing of Instruments

After doing some figuring, we decided that at 22 lb. suction pressure we should manufacture more ice, so the testing of gages and thermometers was the next step. The suction pressure gage was found to read 7 lb. high. The chief operator said he set gage up 7 lb. to keep the manager from hollering at him to keep suction pressure up. He said it kept the manager quiet, but the ice capacity did not increase. After gages were reset and tested, we found out we were actually operating on 14 to 17 lb. suction instead of 20 to 22 lb. Since the brine temperature usually was higher than the suction pressure, it was evident that this system was not operating to best advantage.

A meeting of the Illinois ice association in Springfield presented an opportunity for a conference at the plant. There our manager, C. B. Crossette and I discussed the problem with Eugene Rytlewski of Chicago Chapter. It was decided to modernize the ice tank, originally installed in 1909 and to change some other portions of the system to bring them up to date. After stripping the freezing tank we made a close check of the coils and found them to be in very good condition.

It was decided to use these coils again but to reconnect them for shorter gas travel and provide larger headers. The method used is sketched in Fig. 1. The size of the main suction header was multiplied several times and each coil was divided into two sections. This improvement in the coils was supplemented by the installation of an accumulator or surge drum 2 ft. diameter by 8 ft. high. A float switch operating a solenoid valve was installed in connection with the new accumulator to control liquid ammonia feed to the coils. The suction main from the accumulator to the compressors was increased to 6 in. pipe in place of 4 in. used previously.

The ice freezing tank had been equipped with 4 horizontal and 2 vertical agitators. One vertical agitator was added and now the brine is circulated by 3 vertical and 2 horizontal agitators. A 600 gal. per minute condensing water pump was added to replace an old pump of 450 gpm capacity.

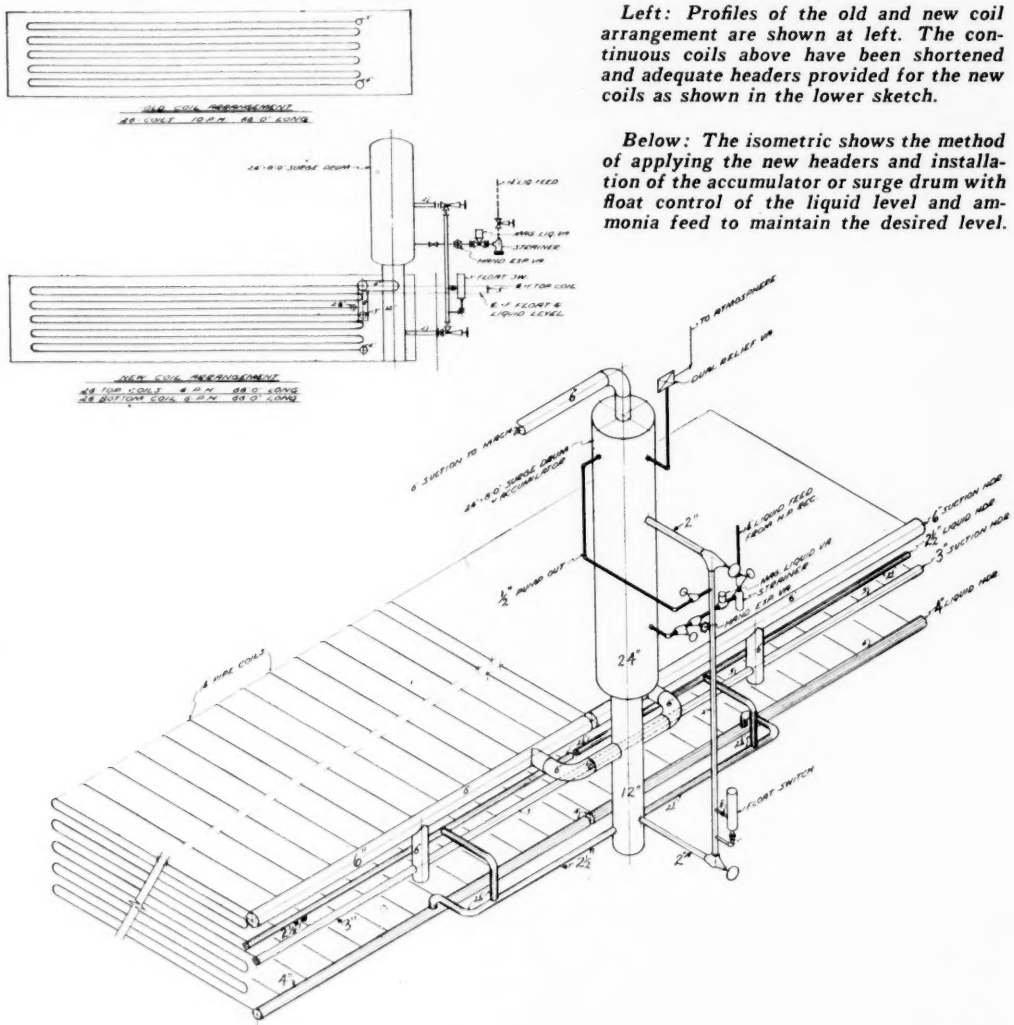
We also made a few changes on the vertical shell-and-tube condensers and receiver. The liquid outlet from condensers was a 1½ in. line with the valve installed in the vertical position which acted as a trap. This was changed to a 3 in. line, with the valve in horizontal position. We also installed equalizing lines from condensers to receiver. Earlier we always had trouble with liquor bottling up in condensers. After the changes no such trouble occurred. A check back on previous year records showed that with the same water temperature over condensers, we were operating with 20 to 25 lbs. less pressure on high side, which is a saving worth considering.

Before making all the changes, we were operating between 14 and 17 lb. suction and 16 to 18 F brine. Production was 40 tons of ice per day, in the peak season.

After modernizing we operated at 25 lb. suction pressure with brine temperature at 15 F. We manufactured 54 tons of ice per day in the peak season which is an increase of 35 percent. The refrigerant requirements showed that the tank coils were really working because 41—150 lb. drums of ammonia were needed to charge the new system. Previously 15 drums or 2250 lb. had been sufficient.

Checking Results

Because this is a combined plant with both ice manufacturing and cold storage it is difficult to make exact comparisons to determine operating improvements. Since ice production represented the largest increase in refrigeration output it appeared logical to compare results on the basis of kwhr per ton of ice made. The figures run high when compared with production data alone. They include power for all services in the cold storage plant as well as for ice cubing and sizing machines, electric water heaters and lights. In short, all power used in the combined plant is figured as kwhr per ton.



Left: Profiles of the old and new coil arrangement are shown at left. The continuous coils above have been shortened and adequate headers provided for the new coils as shown in the lower sketch.

Below: The isometric shows the method of applying the new headers and installation of the accumulator or surge drum with float control of the liquid level and ammonia feed to maintain the desired level.

The period May, June, July, August for the past 5 years (1944-1948) was taken as a basis for comparison. Total power consumption during these 5 four-month periods was 2,053,860 kwhr and during the same period total ice production was 21,525 tons. The power consumption per ton of ice thus averaged 95.46 kwhr for the five year period.

During the same period in 1949 the power consumption was 499,040 kwhr and ice production was 6,266 tons. On a per ton basis this equals 79.64 kwhr. The modernizing program thus saved at least 95.46 – 79.64 = 15.82 kwhr per ton. The saving figures 15.82 × 6,266 = 99,128 kwhr or 991 dollars for the four-month period. It does not however, reflect the full benefits or savings resulting from the modernization program.

The two cooler rooms 40 by 80 by 12 ft. (Table I) were converted from coolers to freezers and held at –10 F which tripled the freezer storage load and space in the plant. At the same time one of the 8 x 8 ammonia compressors was switched and put on the storage and the coolers. The 6 x 6 machine was put on the freezers constantly. The program of modernization not only cut over-all power cost but also provided the equivalent of a modern 6 x 6 compressor. In other words we obtain that amount of additional capacity

(Continued on page 46)

When to Defrost Coils

Question No. 841: In some low temperature rooms refrigerated with pipe coils the ice is practically solid from pipe to pipe which I assume reduces the heat pick-up by the coils. Is there any rule to follow in setting up a defrosting schedule? I assume a small thickness of ice on a coil does not reduce heat conductivity very much?—M.F.

ANSWER: Yes, the accumulation of ice and frost on coils reduces their heat pick-up or capacity, and the thicker the frost the greater the reduction in capacity. Light fluffy frost is a great barrier to heat flow than heavy frost or ice because it has more air spaces and a lower thermal conductivity.

I doubt if you could make a time schedule for defrosting any particular set of room coils because the conditions are not uniform throughout the year. I think that several factors enter into the time for defrosting, namely:

(1) Maximum allowable room temperature.
(2) Economy of operation.
(3) Opportune time.
(4) Convenience and availability of man power.

Under the first factor I remember a case where it took four days to freeze boxed poultry instead of two because the room temperature could not be reduced to –20 degrees on account of accumulated frost on the coils. Of course that slowed down production and we were ordered to defrost the coils. We had to wait at least four days in order to remove the products so that we could get at the coils. This is where "opportune time" enters the picture.

Since defrosting is a disagreeable job it is often put off as long as possible. However, the thicker the frost the more it costs to maintain the desired room temperature, because the refrigerant temperature must be lowered. This is done by running the compressor more hours per day if operation is automatically intermittent or by additional compressor displacement if continuous.—H.G.V.

N A P R E
Question Box

H. G. Venemann, Professor of Refrigeration, Purdue University and chairman of NAPRE Educational Committee, answers members operating problems monthly in this column. Send questions to Chairman H. G. Venneman c/o Purdue University, West Lafayette, Indiana.

Paint on Shelf Coils

Question No. 842: We have a fish freezing room with shelf coils made of 1¼ in. pipe spaced 6 in. center to center. The fish are frozen in pans placed on these coils. It has been suggested that we cover these coils with aluminum paint in order to preserve them. Is this a good idea? Will it reduce the freezing capacity of the coils to any noticeable extent?—T.J.M.

ANSWER: It is my experience that aluminum paint has proven very successful in preventing coils from rusting, especially in freezer rooms. Our ice cream hardening room coils were painted with aluminum paint about seven years ago and it is still on. It is not advisable to paint the threads on flange bolts because it makes it difficult to remove them. The heat transfer capacity of the coils is not noticeably affected by the paint.—H.G.V.

Compressor Oil

Question No. 843: What is the cause of foaming of oil in the gauge glass on a refrigerant compressor crank case? Does this foaming reduce the value of the lubricant?—K.W.F.

ANSWER: The principle cause of foaming of oil is the sudden lowering of pressure in the crankcase when starting the compressor. This is due to the release of ammonia gas which has been absorbed in the oil. There is always danger that foam might be carried over to the high side with the refrigerant. If the compressor is equipped with an equalizing line between crank case and suction, the equalizing valve should be barely open when starting the compressor. This will give a gradual pressure differential between crank case and suction line and prevent the oil from carrying over. It may not prevent foaming until all of the gas has left the oil. The lubricating properties of the oil are not affected by the presence of foam on top.—H.G.V.

NEW QUESTIONS
Answers in May Issue

Sub-floor for Cold Storage

Question No. 844: The expansion of our processing facilities makes it necessary for us to construct additional freezer storage space. For the floor construction we are thinking about putting in drain tile of the proper amount for ample drainage under our room. On top of the drain tile and fill we plan to use 8 in. of crushed limestone rolled level and tarred similar to a macadam road. Our insulation would be placed on top of this base and a 6 in. concrete floor placed on the insulation.

This substitution of macadam for a concrete sub-floor would save an appreciable amount of money on original cost. Have you any data on this type of construction as compared with concrete sub floors?—A.T.L.

Leak Location

Question No. 845: What would be the best method for locating ammonia leaks in a place where no fire could be permitted and no sulphur taper could be used?—E.I.G.

Protecting Underground Pipes

Question No. 846: We have a 5 in. cooling water line that is buried in soil which is frequently saturated by concentrated spray water drifting from our cooling tower. The underground section of this pipe, about 100 ft. long deteriorates rather rapidly. What is the best procedure to preserve short lines like this one? Under what conditions would anodic protection, as with magnesium, be practical on relatively short underground lines?—R.G.V.

(Continued from page 45)

from the installed machinery as a result of the program.

Other advantages resulting from the changes included even, trouble free operation. One of our 9 x 9 machines had been very bad about pumping oil. This trouble has now ceased completely. We had no liquid coming back to the compressors in the suction gas. Temperature of ammonia gas leaving the accumulator is 1 to 2 degrees above the boiling point. The recording charts on suction pressure show almost a perfect circle around the clock.

In addition to the items described before the changes included a new dip tank, gages and recorder, a thermometer in the suction line and insulating and painting. Total cost was $4,285. The job was well worth this much from the standpoint of safety in operation alone.

Member Activities

San Jose

By Fred Byl

WE have been having excellent meetings on the second and fourth Monday of each month. Credit must be given to Bob Roberts and Professor Harold Hayes of the University of Santa Clara for our success.

During the early part of the season Professor Hayes' lectures were concerned with refrigeration fundamentals and presented the basic equipment and factors in refrigerating systems. Later classes proceeded into a broader phase of the subject.

Our season was opened with a plant visit to the Westinghouse Electric Corp. at Sunnyvale. The men enjoyed this trip a great deal. Special speaker at the next meeting was Mr. McCombs of Belmont Instrument Co. on electronics and refrigeration control. "Fans, Their Application and Use" was the subject of the next meeting presented by Robert Zillus, Phillips Refrigeration Products, San Francisco. The following meeting featured a question and answer night.

President Andrew Hope of San Francisco Chapter came down to give us a report on the National convention. At the same meeting Wm. Krock, Sporlan Valve Co., Los Angeles, discussed Thermo Valve Principles and Applications. All of us enjoyed the Christmas feed at Wieland's Kitchen. The officers for 1950 were elected at this meeting.

Refrigeration in the Construction of Friant Dam was an interesting subject discussed by T. A. Dungan, Food Machinery Corp. The plant visit to the Beech Nut baby food plant was our next meeting. A. F. Tudury, president of Power Specialties Co., San Francisco, presented a talk on automatic purging equipment at the following meeting. Less than a week later we had a very interesting tour when we made a trip to San Francisco to inspect the American President Line steamship, President Wilson.

The officers serving the chapter during 1950 are:
President, George W. Scott.
Vice-president, L. C. Watkins.
Secretary-treasurer, Fred M. Byl.

Stockton-Modesto

By R. M. Edger

At our meeting held in Stockton we had Mr. Hansen of the Union Ice Co., San Francisco, who gave us a very interesting lecture on safety. The members really got a lot of good from his talk since the Union Ice Co. has a very fine safety program, and Mr. Hansen is very good at explaining how this safety program works. It apparently is bringing results because their figures show that the frequency of accidents has been reduced.

Mr. Hansen brought a print of their escape door. This door is now installed in all their cold storage rooms just in case the main door becomes locked or jammed; then a person can escape as this door operates from within. He also explained a new system of lighted exits which are battery powered. They flash on in event the lights go off while men are inside the cold storage rooms and light up all escape exits.

He explained how to fight various kinds of fires and described smoke and ammonia masks now in use. Also the latest extinguishers available and how best to use them. He also brought out the fact that it is possible for smoke and ammonia fumes to be present in the room at the same time making neither ammonia or smoke masks of any value. Therefore an oxygen mask should be available in all plants. All in all he really covered safety in the ice plant.

The principal speaker at the following meeting in Modesto was Charles Coil, Dow Chemical Co., and a past president of San Francisco Chapter. Mr. Coil explained the principles of anhydrous ammonia manufacture in a manner we could all understand. Although the process sounds very simple, the pressure runs up to 5,000 pounds psi indicating that careful control must be exercised to avoid hazards and explosions. At the conclusion of his lecture, Mr. Coil answered questions and I am sure all the members received useful knowledge about handling ammonia. These men will be more careful around their plants while welding when the air contains ammonia fumes.

Our annual party was held at the Polar Rink in Modesto on Monday, March 6. This was a "Bring the Family Along" affair which all of us enjoyed. The members ice skated until 10 p.m. when refreshments were served. Another party like this will bring out even larger attendance I am sure.

Memphis

By Charles Conley

The members and friends of the chapter made a plant inspection tour of the International Harvester plant. This trip was through the courtesy of Bob Massey, Public Relation Manager, Erlewood Barden, Director of Safety and Wm. K. Brooks, Superintendent of Maintenance. A delicious country fried steak dinner with all the trimmings was served the group in the plant's cafeteria. Bob Massey had the group gather after the dinner in the assembly room where he gave them a talk on the history of the plant, its operations and what is made in the plant. He said the entire plant and testing grounds consisted of 260 acres.

The plant proper is all on ground floor level which consists of foundry, assembly, painting, storage and shipping. In the foundry the casting of the various parts is done on the line method as well as the assembly and the painting. The power plant and the cupola are the only structures that rise more than one story level above the ground. The power plant is fully automatic using coal as fuel under the boilers. They have a York Corp. refrigeration system for cooling brine for the processing of castings, they have a Westinghouse Steam Jet air conditioning system for the comfort cooling of the offices, cafeteria, rest rooms, assembly hall and the medical department of the plant.

The chief products made in this plant are the hay balers and cotton pickers. The plant is located about 15 miles from the loop of Memphis on the Mississippi River banks, which is a northwest direction from Memphis in a very fast growing suburb of Memphis known as Frayser.

At the following meeting, R. H. Schulz, Minneapolis Honeywell Co., gave a talk on various types and kinds of controls used in automatic refrigeration and air conditioning plants. He said that the electronic type of controls is fast replacing the old electrical types. The former can be produced and sold for less and they require less attention to keep them operating in good condition. Mr. Schulz had several typical electronic controls with him which he took apart and explained to the group.

We welcomed three new members into the chapter: John C. Bates and Tom P. Rainey of the Phoenix Rubber Co., and Guy E. Yarbrough, master mechanic of the Memphis Packing Co.

San Francisco

By Hunter McLaughlin

During our meeting of February 9 we inaugurated an entirely new educational program for our preliminary class work. The new arrangement is headed by Bill Orton and Bert McKenna, both of whom have put a great deal of planning and effort to make this phase of our activities a success. This being our first meeting under the new arrangement, we have not been given a thorough look into what will unfold for us at future meetings.

At the last meeting Bert McKenna distributed a chart of a typical 2-stage booster refrigeration system that incorporated just about every bit of equipment and accessories that a complete plant would have, that was devoted to freezing as well as high temperature storage. Then the membership was called on for discussion. The result was

that very few elements of the system were discussed. This was because of our moderator's direction. But the few elements of the system that were discussed, were pretty well covered. Just about everyone had an opportunity to bring out short-cuts, practical methods or things to avoid. This method of conducting our educational section has aroused a great deal of interest, particularly since all of the members can take part.

The members of the chapter learned with regret of the death of William G. Olsen. A member of the chapter since 1932 he had recently been transferred to southern California. There he was supervising engineering at the Golden Valley Creamery, Newman, a subsidiary of the Arden Farms Co. Injuries suffered in an auto accident caused his death.

Los Angeles

By Fred Herr

Announced as a pre-convention rally, Los Angeles Chapter's March 1 meeting in the Terminal Club drew an attendance of 65 members and visitors to discuss preliminary plans for the NAPRE convention to be held there this fall, along line which indicates that the 1950 conclave will undoubtedly be a memorable one from all standpoints—technical sessions, business meeting, plant tours and entertainment.

Business having no reference to the convention was, on the whole, tabled by President Dale Rycraft in order to permit concentration on discussions of convention plans; all that is, except the potent one of admitting new members, which keep pouring in at every meeting. Lloyd Blound and Hugh Dodd of the Baker Refrigeration Corp. were initiated.

W. R. Burnett, national and local membership committeeman, disclosed that 21 new names had been corraled since the 1950 campaign got underway. Leader in point of total new members, as of March 1, was Clifford Nordholm of the Baker Refrigeration Corp., who was suitably rewarded with a prize lifted from the capacious depths of Burnett's briefcase.

Convention talk was deferred for a few moments at this point to permit Frank G. Hooper, chairman of the Barracuda Committee, to report that requests for attending the two deep-sea fishing trips scheduled for June 17, and August 5 were coming in so rapidly that it has been found necessary to put the matter on a first-to-register-first-to-go basis, since the fishing schooners will only accommodate 16 men per trip.

President Rycraft then threw the meeting open to reports by convention committees and general discussion of convention plans.

Burnett reported that a letter he had sent to all chapter secretaries outlining the national pyramid membership plan and requesting donations for the drive, is already producing results. Chicago Chapter, he reported, has promised to donate a ham, emblematic of the Windy City's meat packing industry; Yakima, Wash., will send a box of apples; Colton Chapter, located in the heart of the Southern California navel orange belt, will donate a case of oranges. Los Angeles Chapter, with Colton beating her to the oranges, settled on a case of tuna, representative of its fishing industry. Efforts will be made, Burnett declared, to persuade some other chapters to contribute prizes representative of their areas: like a case and/or barrel of beer from St. Louis; flour from Minnesota, etc.

National President Quinn introduced the convention program discussion with a short inspirational talk. Director of discussion was Regis Gubser of the California Consumers Corp., who declared that no definite program had been worked out yet but that the meeting was being held to gather ideas and listen to suggestions.

The Educational Committee wants to know, he said, what type of program the membership wants for the 1950 convention. Should the papers follow a diversified pattern, or should the subjects be concentrated on one or two specific themes. And if diversification is preferred, just how far should that diversification be carried.

Unanimity was achieved on one point—the matter of allowing more discussion time on each paper than at previous conventions. Unusually, Gubser pointed out, the program provided for three papers per session, which allowed limited time for questions and discussion from the floor. William Losch of the Frick Co. proposed at the March 1 meeting that only two papers per session be scheduled for the Los Angeles convention and that a period equal at least to half the reading time of the paper be scheduled for discussion. This proposal earned many nods of approval.

The feasibility of assuring lively discussion on each paper by assigning certain men to ask pre-arranged pertinent questions, after reading the paper in advance, was also debated. Several members stated that this plan assures a sprightly discussion period, because a man who has pre-read a paper is in position to choose more vital and debatable questions than one who must do it on the spur of the moment when the speaker has finished reading.

The matter of plant tours was also gone into thoroughly. One member suggested that so-called group tours be arranged so that a visitor could select whether he preferred to go to an ice plant, cold-storage, car-icing plant, a brewery, dairy or air conditioning plant. It was proposed that such tours be limited to five, but that assigned guides be held available to escort a delegate from out of town to any specific plant or factory he has decided upon.

The program concluded with the showing of a film containing the highlights of the Los Angeles Rams football season. The film and a buffet lunch which followed, were offered with the compliments of Frank Muzzy and William Ruby of Skasol Products Co.

The preliminary class was held from 7 to 8 p. m. Instructor George Paulick discussed principles of refrigeration as applied to storage space, illustrating certain phases with slides. This was Part I of a subject to be continued at the next preliminary class.

Chicago

By E. B. Jones

An informal meeting with 3 representatives of the city of Chicago featured the first meeting of the month. These were: Gerald Gearon, Supervising Mechanical Engineer, James McKeague, Superintendent of Refrigeration and P. J. Murray, Plan Examiner, all in the Boiler and Refrigeration Division who joined in the presentation of a panel on "Practical Interpretation of the Chicago Refrigeration Code."

Mr. Gearon reviewed the history of refrigeration regulation in Chicago. It began about 40 years ago and developed through a brief code until 1925 when a comprehensive code was drawn up. The objectives of the code and its administration according to Mr. Gearon are public safety combined with sufficient latitude to permit sound industrial development at a reasonable cost. The code has been made flexible enough to keep up with modern improvements and the personnel of the Administrative Department has maintained a co-operative attitude in order to place no restrictions on industry which are not required for prudence and safety.

In answer to questions from the audience Mr. McKeague discussed water conservation regulations which are becoming more extensive throughout the country. To safeguard the industry in Chicago against undue restrictions of a punitive nature, new regulations are recommended, which would require a positive stop valve to eliminate waste of water when refrigerating machines are not operating. A good thermometer would be required in the condensing water outlet and the temperature would have to be kept between 90 and 95 F. Comfort cooling installations would be allowed 1-¼ gpm per ton of refrigeration while general refrigeration would be allowed a maximum of 2 gpm per ton of refrigeration. Where comfort cooling installations use more than 20 gallons per minute they would have to install condensing apparatus making use of the latent heat of the water supply.

There was a considerable discussion on these various provisions. Mr. Murray also analyzed the water disposal problem presented by old sewers of inadequate size which are found in some sections of the city. He also called attention to the extra cost of sewage treatment when water is used on a wasteful basis and discharged into the sewer.

A field trip to Chicago Plumbing Laboratory brought a totally new experience to most of the chapter members. This laboratory was set up after a serious epidemic of amebic dysentery caused by water pollution through defective plumbing.

The laboratory investigates practically all of the plumbing fixtures and methods utilized in this country and has set up a number of regulations to guide evaluation of plumbing fixtures as well as anything attached to the city water supply. An elaborate plumbing demonstration has been arranged with glass piping, fixtures and valves so that practically any type of installation can be simulated.

A very impressive demonstration and lecture was given by Ed Zimmer, director of the laboratory, who showed with detailed illustrations the serious dangers presented by incorrect plumbing methods.

Seattle

By Chester Bertus

The new officers for 1950 took office at this meeting. They are: President, J. B. Pamment; Vice-president, Wm. S. Allen; Vice-president, O. F. Gellert; Secretary-treasurer, C. L. Bertus.

President Pamment presented a gavel to the chapter then he announced the chairmen of the different committees for the year. Ralph Johnson succeeds Robert Rittenburg as Educational Chairman who, in the past year through very great efforts, gave the chapter a number of very interesting and enlightening programs. Membership Chairman is Clarence Giel and Jack Atkins will head the Finance Committee. Dave Pabst remains as chairman of the Entertainment Committee.

A talk on modern trends of refrigeration was given by George Bracket of the Lewis Refrigeration Co., in which he described the new methods which have come into the refrigeration business since the end of the war. Among these are keener competition in selling, closer cooperation between the employee and employer, one man ice plants, new methods of freezing fruit, pre-cooling methods and the handling of foods through distribution channels. Following his talk, the members held a group discussion on the subject.

The chapter welcomed William Sills and Robert O'Dell, both of the Ranier Ice & Cold Storage Co., to membership.

M. I. Smith, of the Edison School, gave a brief account of the proposed new refrigeration ordinance of the City of Seattle, and asked the chapter if a committee could be formed to work on and with other associations for the purpose of writing a good workable ordinance for the City of Seattle. James Bennett and Albert Zemko were appointed as a committee of two to represent the N.A.P.R.E on the matter.

Pittsburgh

By Otto Knoch

On March 15, the Pittsburgh Chapter had a most inspiring meeting given through the cooperation of the Westinghouse Electric Corp. Robert Neupert of the Educational Committee secured two films from them and through the courtesy of the Duquesne Brewing Co. who gave us the use of the projector, the members were given the opportunity to enjoy two good films.

The one, "Electronics at Work," showed an electronic tube that generated, amplified, rectified and controlled electronic rays which are used in the steel mills, television, aeronautics, and photography. This is proving to be another medium by which men's tasks are gradually being reduced.

The other, "Adventures in Research," dealt with the improvement of the vacuum tube which has been widely used in radio. Continued research has multiplied these uses in factories and in numerous other fields including radar and the electric eye. This tube will produce a radar ray when reflected on a light bulb or fluorescent lights and will cause them to light without the use of wire.

Our suggestion would be that it certainly would be beneficial to any chapter to secure and show these films if it is possible to do so. Our plans for the future are to continue featuring films as this seems to be the type of program that the chapter desires. We hope to arouse the interest of our members to obtain new ones for the new drive in an effort to compete for the Pyramid of Prizes.

Yakima

By Elmer Toop

At the latest meeting we continued with a discussion of methods and equipment used for the refrigeration of cold storage rooms. Design, maintenance and operating problems were rather thoroughly discussed.

The the chapter proceeded to a discussion of the matters presented in the question box. It was voted that Virgil Harrison be placed in charge of the question box. A letter from W. R. Burnett, chairman of the membership committee, requested prizes for the Pyramid in the National contest. The chapter voted to donate a box of apples.

Colton

By H. O. Bonter

The regular meeting was held at the National Ice & Cold Storage plant at Riverside. In spite of the rain which might have dampened our spirits, there was a good attendance and a good program was enjoyed by all.

President Purkiss introduced Arnold Bagwell a student of the Colton Union High School who was projectionist for a film on geology and oil exploration. The film was secured for us by Don McIntosh, superintendent of the high school. The next feature on the program was presented by Jim and Douglas McCririe of the Reliable Bearing and Supply Co., San Bernardino. They had arranged for a lecture and discussion on bearings which was presented by Otto Neumer, resident engineer and W. R. Weidner, district manager, for the S.K.F. Industries. Mr. Neumer gave the group as fine a talk on bearings as it has been our privilege to hear. He touched on the origin, types, manufacture, use and abuse of bearings as well as their application and maintenance. A "Dutch" lunch was served at the conclusion of the meeting.

The annual dinner of the chapter was held at the Santa Fe Ice plant in the lunch room where an excellent dinner was enjoyed by all those present. A number of guests were welcomed to the affair. These included President Emmet Quinn and several others from Los Angeles Chapter. Mr. Quinn gave a very interesting talk on what all members should do for the good of their chapters and the organization as a whole. We appreciated his compliments to Colton.

Special speaker of the evening was Frank Harris of the Ingersoll-Rand Corp., who gave a general discussion on equipment and installations and the operation of various types of machinery and tools. The chapter wishes to thank the members and their wives who helped to prepare and serve the dinner. All of them did a fine job because everything was perfect and enjoyed by all. President Purkiss was certainly effective in the way he handled the program and the entertainment.

On March 8 the group met at the Riverside Cement Co. plant at Cresmore, Calif., for a trip through the plant. It was very interesting to follow the rock from the huge jaws of the crusher that actually seemed to chew the large rocks and swallow them and then on the conveyors to other parts of the plant for mixing with other kinds of material, clay, iron ore, gypsum and others. Then the mixture passed to the grinders and on to the kilns to be burned into clinkers and back to the ball mills to be ground into cement. The finished product goes through pipelines to the storage silos and from there to freight cars and trucks for shipping or to the sacking machines which put it into the sacks and weighs it.

After the trip through the plant the group adjourned to the company dining hall where donuts, coffee and pie were served. The plant superintendent and chemist answered questions about cement and they gave a long talk on the history of making cement, dating back to the B.C. time.

Fresno

By M. Pedersen

The meeting was devoted to piping subjects and other matters related to refrigeration. One subject which came in for considerable discussion was the method of thawing out frozen water pipes by the use of an arc welder. A very interesting talk on manufacture and installation of large concrete pipe was presented by C. A. Fernald. At its conclusion, he answered a number of questions.

U. S. Liner to be Air Conditioned

A COMPLETE shipboard air conditioning system will be installed on the S. S. "United States" now being built by the Newport News Ship Building & Dry Dock Co. The new liner will be equipped to carry large quantities of refrigerated stores at both freezing and higher temperatures. Air conditioning will be provided by York Turbo compressor water cooling system. Condensers for the ship's stores refrigeration system also will be of York design. The ship has been so designed that it may be quickly and economically converted into a troop ship.

Pyramid of Prizes Sparks Membership Race

THE urge to secure new members will prove irresistible when the Pyramid of Prizes piles up under the watchful eye of Ray Burnett. Vice Chairman of the Membership Committee, Ray has added a spectacular phase to the 1950 campaign. The men who pile up points in the contest will be rewarded for their individual effort.

Ray Burnett, Vice Chairman, National Membership Committee.

This year the contest follows the pattern which experience has demonstrated will get results: It has worked for several years in Los Angeles and brought in many new members. The emphasis is placed on individual effort and very attractive rewards are offered to the winners in the contest.

Chapters all over the country are piling up the Pyramid Prizes. One of the first to reply to the Burnett request for a typical or local product was Chicago. They settled rather quickly on a nice big ham to represent the city as a packing center. A spokesman for the chapter expressed the opinion that any of those people in other parts of the country would be overjoyed to receive a real Chicago ham. They are so much better than local products, he said. In answer to a direct query he replied that the famous "wind" of Chicago is not considered exportable.

Colton chapter in the orange belt of California is making a typical donation. There would be a humorous twist to the matter if this box of oranges were won by a member of the Rio Grande Valley Chapter in Texas. The latter are also proud of the oranges grown in their territory.

A box of Delicious apples is the prize contributed by Yakima Chapter. They know their apples in Yakima so this prize will give the winner a delightful treat.

Their neighbors in Tacoma Chapter are providing a Puget Sound salmon from the famous Commencement Bay. The sea also furnishes the prize from Los Angeles which is a case of the best grade tuna. This deluxe canned fish is a national favorite. When the families hear about these prizes the members will certainly be pushed to do their best to win.

Dallas Chapter is furnishing a Hand Tooled Belt of any size from the world famous Texas leather workers shops. Additional prizes of great attractiveness and value are being offered by other chapters and will be detailed as the contest continues.

All In

Every member of the association is entered in the contest according to Ray Burnett. This includes members of large and small chapters and members-at-large. The chapters that started the year with 75 or more members are classified with the large group. The remainder comprise the smaller chapter group of the contest and the members-at-large are included in this group.

The awards from the Pyramid of Prizes will be made to those individual members who secure the most new members up to the end of the contest on October 15. Each chapter secretary will keep account of the new members brought in by the individual members and furnish the record from time to time to the national office. The latter will keep the account for the members-at-large.

A number of chapters have also set up prizes within their local group to spur added zeal. In Los Angeles every man who brings in a new member during the year will be given a special treat at their wind-up meeting in the fall. For five new members they give a choice of the latest edition of the association's text books. The bonus winner who has these can select as alternate a bottle of nourishing beverage certified by government bond stamp. If the man doesn't drink, then Ray Burnett and others will help him out.

At the top of this chapter's merit awards is a G.E. Electric Roaster for the man who does the best job of securing members. These prizes that appeal to the whole family appear to be a specialty where excellent results have been obtained.

Every chapter and every member is urged to full participation in the 1950 membership drive. From every standpoint it is most worthwhile. The rewards are big. Superior effort will pay off this year.

Tungsten and Molybdenum Compounds Prevent Corrosion

CORROSION of steel and iron by circulating water can be almost completely prevented by addition of small amounts of tungsten and molybdenum compounds, the Institute for the Study of Metals of the University of Chicago has reported. The new rust-preventors were the subject of a paper read by William D. Robertson, assistant professor, before research experts from the firms which contribute to the support of the university's three institutes for basic research in metals and nuclear science. Robertson revealed that potassium and sodium compounds of tungsten and molybdenum can make substantial cuts in the annual billion-dollar losses caused by rust.

The compounds, sodium tungstate, potassium tungstate, potassium molybdenate, and sodium molybdenate, are expected to be especially useful in the air-conditioning and cold-storage industries. Both of these industries make extensive use of steel pipes to circulate water or brine. Dissolving a few hundred parts of the tungsten and molybdenum compounds in a million parts of the circulating water or brine will stop rusting. Water circulating through a steel pipe can corrode four pounds a year per square yard of exposed metal. Brine is even more corrosive.

These new anti-corrosion chemicals were discovered in the course of an investigation into why potassium and sodium chromates keep water from rusting steel. These substances have been used as rust inhibitors for 40 years, but no one is yet sure how they work. In looking for an answer to this problem, Robertson tested the molybdenum and tungsten compounds. He found that they were just as effective in curbing corrosion as the chromates and in lesser amounts.

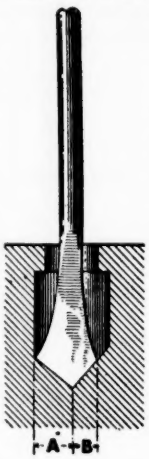
The new compounds are currently more expensive than the chromates but have one major advantage over them. The chromates are a vivid yellow, which make them unsuitable for use in processes where such color would be undesirable. The tungsten and molybdenum compounds are colorless, which extends the possibilities for use of corrosion inhibitors, including anti-corrosive paints. It is also expected they will be as effective as the chromates in protecting aluminum and magnesium against corrosion. Robertson is continuing his researches on the exact mechanism by which these rust-inhibitors work.

The Institute for the Study of Metals, together with the Institute for Nuclear Studies and the Institute of Radiobiology and Biophysics, is supported in part by contributions of $650,000 a year from 23 industrial firms. Research staff men from these companies attend regular quarterly meetings with institute scientists.

ENGINE ROOM POINTERS –

Making a Home-Made Twist Drill

IF you haven't a twist drill of a given size, it is not difficult to make your own drill, in any size, out of ordinary drill rod steel, in the manner as illustrated in the sketch herewith. Hammer the end of the drill rod out flat, after heating it red hot, of course. Then cut and grind to the desired dimension. Thus for example if you want to drill a half-inch hole the distance A should be one-fourth of an inch. For best performance the distance B should be equal to A in which event the point will be exactly in the middle.



By making B less than A, as shown in this sketch, it is possible to make the bottom of the hole greater in diameter than the top of the hole, as indicated. The diameter of the hole will always be twice as great as the greater radius, which in this instance is A. As for cutting angles, the best way to get them right is to follow the cutting edges and angles used on standard drills.

While we are on the subject it may be well to add a caution on grinding of all drills. Remember that the diameter of the hole will be enlarged if the drill is not ground accurately. With an off-center drill the diameter of the hole is twice the greater radius as mentioned before.—W. F. S.

How to Make That Portable Oil Heater Do Better Work

COMPLAINTS are being received about portable oil heaters—that they don't operate as well as they once did. The fault seems to lie with the kerosene. One letter stated: "Having need of several portable kerosene oil heaters, we are having a lot of trouble with kerosene depositing carbon or greasy soot on the burners and also on the walls of the rooms, not to say anything about odor. We are taking the usual precautions of trimming wicks and brushing burners and air caps with a stiff brush. Is there any substance or fluid that could be added to the kerosene to overcome these conditions?"

Answer: The carbon in the kerosene is what causes the smoke and soot. There is a substance that can be added, yes, but it has a higher flash point than kerosene and is regarded as more or less dangerous to use, consequently is not recommended. The logical thing to do, in view of the greater present carbon content in the kerosene, is to increase the amount of air in one way or another—by enlarging the openings through which the air passes or by increasing the draft with a fan. You can burn powdered coal by giving it enough air and, likewise, by making conditions right for inferior kerosene you can burn such kerosene without soot or smoke. The important thing is: give it the right amount of air necessary for supporting combustion.—W. F. S.

Does It Need Oiling?

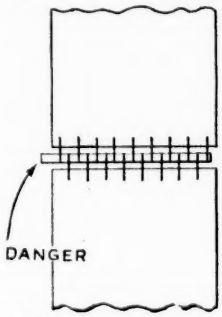
DON'T ever allow oiled equipment to operate until it is without oil. If it is a fan, electric motor, water motor, engine, lawn mower, vacuum cleaner, or anything of the sort, it needs oil. Don't let it get "dry."

The simplest way to determine whether or not equipment needs oiling is to note whether or not it stops abruptly as soon as the power is turned off. Take for example an ordinary electric fan. If the fan is properly oiled it will run along for some time after the switch is turned, due to its own momentum. If it is not properly oiled it will stop quickly. The dryer it is, the quicker is the stop.

It is therefore a good habit, when you turn off equipment of this sort, to watch it for a moment after the power is turned off. If it stops abruptly, it certainly needs oil. If it runs along normally and easily, coming to a halt gradually, as it should, its condition is safe. The friction is not excessive.—W. F. S.

Dangerous Belt Joints

THERE are various types of dangerous belt joints. Nearly any joint that is "rough" can be more or less dangerous as for example those that are held together with metal fasteners and particularly those that are bolted.



When the type of belt joint shown in the accompanying sketch is employed, be careful. Do not attempt to shift such a belt by means of the bare hand while it is in motion because the projecting end of the rawhide or other pin may seriously tear the flesh. In some localities joints of this kind are prohibited by law on drives that are likely to be shifted by hand. In fact it is well to be on the safe side and make a ruling of your own to the effect that the bare hand must never be used for shifting a moving belt. Don't take unnecessary chances.

Poor Piping Layout Causes Fatality

SO much has been preached and printed about the necessity of allowing for expansion and contraction in steam piping that one reads with amazement that a man actually lost his life when an elbow failed because of poor design. It appears that not enough room was allowed for expansion and contraction between boilers. As a result the elbow was subjected to a stress that it could not withstand, and it failed. A man lost his life.

All accidents of this sort are preventable. The designer of the above piping layout very likely "knew better" but he may have been rushed. One more minute of thought given to that detail might have saved the man's life. Or, the checker should have caught the error. Sometimes installation men discover errors of this kind.—S.F.W.

Refrigerated Warehousing Industry

NEWS • ARTICLES • ANNOUNCEMENTS

NATIONAL ASSOCIATION of REFRIGERATED WAREHOUSES

Division of American Warehousemen's Association

Executive Offices:
Tower Building, Washington 5, D. C.
Executive Vice-pres., Wm. Dalton
Secretary, Jos. H. Colquitt

President, J. L. Gagini
Omaha, Nebr.
Vice-president J. P. Johnson
Washington, D. C.
Treasurer, Wm. A. Moore
New Orleans, La.

The PMA and Refrigerated Warehousing

By M. J. Hudtloff

United States Department of Agriculture

Refrigerated warehousemen know that the Production and Marketing Administration of the U. S. Department of Agriculture is related to and affects their business contacts with the government. How this comes about, and a good working knowledge of the activities and functions of the PMA, the Commodity Credit Corp., and the Transportation and Warehousing branch of PMA is provided in this discussion.

I WAS supposed to talk on the subject, "Your Government and You." But that subject is pretty broad. So I am going to whittle it down to size and confine my remarks to operations of the Production and Marketing Administration, the Commodity Credit Corporation, and the Transportation and Warehousing Branch of PMA.

Production and Marketing Administration

PMA, looking at the agency as a whole, brings together under one roof a large part of the "action" type of program carried on by the Department of Agriculture. In the production field, it administers the price-support program and related activities. It handles adjustment operations, such as acreage allotments and marketing quotas. It carries on an agricultural conservation program, aimed at stopping the depletion of soil and water resources.

In the marketing field, it provides a number of services, such as market news, development of standards, and inspection and grading. It administers several regulatory statutes, including the U. S. Warehouse Act, the Packers and Stockyards Act, and the Sugar Act. It administers the National School Lunch Program and other programs to increase the domestic consumption of farm commodities. It procures large quantities of food and fiber for use in export programs. It carries on research to increase the efficiency of the marketing system.

Commodity Credit Corporation

The Commodity Credit Corporation, which functions under a permanent Federal charter, is a financing and control agency of the Department of Agriculture. It is capitalized at $100,000,000, the U. S. Government owning all the capital stock. Most important, however, it has authority to borrow and to have outstanding at any one time $4,750,000,000 to carry on its operations.

The most significant of these operations, by far, is the price-support program. But Corporation funds also are used to procure, both at home and abroad, a substantial part of the commodities exported under foreign relief and reconstruction programs of the Economic Cooperation Administration and the Department of the Army. **The Corporation, furthermore, handles the storage facilities program.**

Transportation and Warehousing Branch

Some of the work of the Transportation and Warehousing Branch was started early in 1941, following passage of the Lend-Lease Act. The Department of Agriculture, under that Act, was given the emergency assignment of procuring, as well as storing and transporting to seaports, the agricultural commodities this country was sending to Lend-Lease countries. Following Pearl Harbor, this work was expanded greatly to encompass procurement for all allies of the United States, the armed forces, and, to some extent, for the civilian population. During one period in 1944, procurement reached the huge volume of seven million dollars' worth of commodities per day.

After the war, transportation and warehousing work in the export field was continued, keeping pace with procurement of large quantities of farm products for the United Nations Relief and Rehabilitation Administration, the Department of the Army, the Department of State, and cash-paying foreign governments. The branch is still very much in the export picture.

During the fiscal year 1949, for example, the Department procured almost 15 million long tons of food, primarily for

From an address given at the annual convention of the National Association of Refrigerated Warehouses.

These Questions — Asked by Refrigerated Warehousemen Are Answered in This Article by a USDA Official

1—What are the purposes and functions of the Production and Marketing Administration, the Commodity Credit Corporation and the Transportation and Warehousing Branch of PMA?

2—What is the current storage expansion program of PMA?

3—What are the limitations on construction or purchase by the government of refrigerated and cold storage facilities?

4—What are the plans in regard to terminating present leases on cold storage facilities?

5—What is the government's attitude toward the National Cooler Storage "Cave" at Atchison, Kans.?

6—Upon what bases are commercial facilities for storage of CCC-owned commodities selected?

the Economic Cooperation Administration, the Department of the Army, and cash-paying foreign governments. In addition to handling storage and transportation of these commodities to port positions, the branch arranged for ocean transportation on commodities destined for Germany, Greece, Turkey, China, and Korea.

Purely in the transportation field, the branch has the task of seeking, through regulatory agencies and through informal negotiations with carriers, equitable freight rates for farm products shipped by rail, truck, boat, and plane. It also has the responsibility of "screening" storage guarantees, under which the CCC commits itself to guarantee utilization of additional storage space in facilities construct by cooperatives or commercial warehousemen.

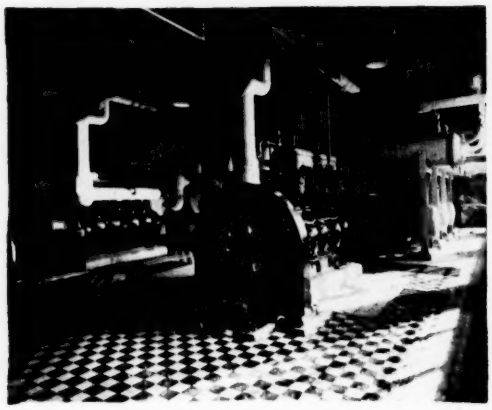
To round out this brief description of functions carried on by the branch, it handles, in the case of commodities stored in commercial facilities, the selection of the location, the examination of the facilities, and, for all Government-owned agricultural commodities, the maintenance of inventory management records. It administers the U. S. Warehouse Act, under which 1,450 warehousemen are licensed. It operates the Natural Cooler Storage Facility at Atchison, Kansas. It issues monthly reports on cold storage occupancy, an annual survey of space in refrigerated warehouses, and other reports having to do with the refrigerated warehouse industry.

That just about covers, in brief fashion, the organizational side of the Department's transportation and warehousing activities. Let's turn now to storage programs and policies.

Storage Expansion Program

The most important program in the storage field right now is the so-called storage expansion program. This operation, as you may know, is tied in tightly with the price-support program. Here's why:

A producer must provide safe storage, either farm storage or commercial storage, to be eligible for non-recourse loans made or guaranteed by the Commodity Credit Corporation. During the fall of 1948 producers caught without storage facilities were in a bad spot. They had harvested large grain crops, and they wanted the protection of price support. But because they could not provide safe storage, many of them had little choice but to sell their grain at prevailing market prices which, in many instances, were below the support level. As you may recall, this situation led to quite a clamor for the Government to step in and erect emergency storage.



Interiors of Natural Cooler Storage at Atchison, Kansas. Left, the machine room showing two compressors, three condensers and three receivers. Right, one of the storage rooms showing brine lines, ducts and stored foods.—Photographs by Frick Co.

But the Government, specifically, the Commodity Credit Corporation — was also in a bad spot. The Commodity Credit Corporation Charter Act, which became law in June 1948, provided that, "the Corporation shall not have power to acquire or lease any (such) plant or facility or acquire or lease real property or any interest therein, except that . . . it may continue to lease (by renewing or extending existing leases or entering into new leases) property leased by it on the date of the enactment of this Act."

The Corporation was thus prohibited from buying or leasing new bins which were to be used to store commodities controlled by the Corporation or from buying or leasing additional land on which to put any facilities. In effect, then, the Corporation's ability to store grain was limited to the storage capacity available when the act was passed, about 50 million bushels.

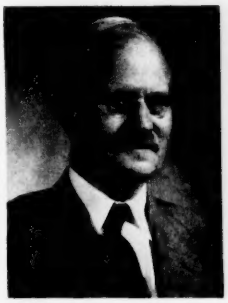
It has been charged that the Commodity Credit Corporation, through its storage facilities program, is deliberately attempting to wreck the commercial warehousing industry. I am sure nobody really believes that, not even the few who have made the charge. The CCC Charter Act says that "in the warehousing, transporting, processing, or handling of agricultural commodities, the Corporation shall, to the maximum extent practicable consistent with the fulfillment of the Corporation's purposes and the effective and efficient conduct of its business, utilize the usual and customary channels, facilities, and arrangements of trade and commerce."

The amendment to the Charter Act authorizing the acquisition of storage facilities contains a big PROVIDED to the effect that "the authority . . . shall not be utilized by the Corporation for the purpose of acquiring real property . . . to provide storage facilities . . . unless the Corporation determines that existing privately owned storage facilities for such commodity in the area concerned are not adequate."

(Continued on page 66)

Dr. Samuel C. Prescott—TRRF Board Chairman
Scientist, Scholar and Exponent of Research

ONE of the outstanding figures in the refrigerated warehousing industry, a man who has contributed generously of his time and specialized knowledge to the problems of refrigerated warehousing, is Dr. Samuel C. Prescott, dean emeritus of the Massachusetts Institute of Technology. Recognizing his contributions to the industry, a life membership was conferred upon Dr. Prescott at the last annual meeting of the National Association of Refrigerated Warehouses. The citation read at this presentation emphasized his generous contribution of invaluable service to the progress of refrigeration and refrigerated warehousing. Dr. Prescott retired from active duties with M.I.T. in 1942, at which time he was Dean of Science of that institution.



Dr. S. C. Prescott

As an undergraduate at M.I.T., he recognized the importance of chemistry in respect to foods; and the relation of chemistry to biological phenomena of all kinds. These two interests, in part, determined his later career. Soon after receiving his bachelor's degree in 1894, he became an instructor in that institution, with later promotion to professor, and in 1922 he became head of the Department of Biology and Public Health.

One of his outstanding contributions, made in 1896, was the establishment of the fact that chemical spoilage in canned foods was due to microorganisms. This work has had much to do with the improvement of heat-treatment techniques in the canned food industries, thereby reducing the tremendous losses which existed previously.

In 1905, Dr. Prescott founded and acted as director of the Boston Biochemical Laboratory, one of the very first of its kind in the country. Previous to the World War he established and directed the tropical research laboratories of the United Fruit Co. During the World War he was in charge of the Division of Dehydration, United States Department of Agriculture, which set up methods for the preparation of dehydrated foods for the emergency period, and reached the grade of Colonel in the Sanitary Corps. Reserve of the Army.

Many of his research activities have been concerned with foods. Contributions have been made in the field of food chemistry, of which those concerning milk and coffee have been of particular significance. During the past decade he has been intimately concerned with the researches relating to the use of low temperatures in the preservation of foods. He is president of Commission III of the Institut International du Froid, an organization concerned with researches of this character, and president of the Technology Chapter of the Sigma Xi.

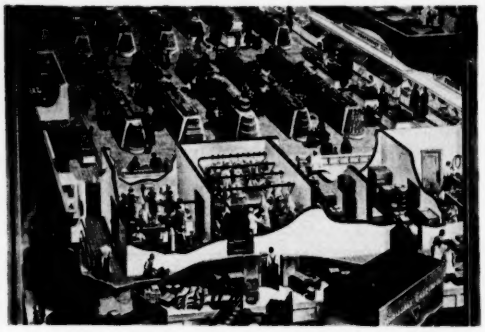
His wide experience in the problems of the food and fermentation industries has caused him to be frequently sought as a consultant, and he has long advocated the need of a common ground for those interested in all the various scientific aspects of foods and their manufacture. These interests led him to a natural affiliation with the work of the Refrigeration Research Foundation, of which he has been Chairman of the Board since its organization in 1944. To this outstanding research organization he has contributed much valuable and sound advice.

Currently, he is active in the affairs of a family company called the Benjamin Chase Co. of Derry, N. H. He has almost completed a history of the first fifty years of M.I.T. Despite numerous interests as a member of the American Chemical Society, the American Academy of Arts and Sciences, the American Society of Naturalists, the Society of American Bacteriologists (of which he was president in 1919), the American Public Health Association (of which he was president in 1927), the Society of Chemical Industry, and various other scientific organizations, it has been his custom to work practically a seven-day week and most of his evenings on his researches, his teaching and his writing. Besides having presented well over 100 original papers, he has been author or co-author of works on water bacteriology, enzyme action, sanitary science, food technology, and has recently been working on a textbook, about to be published, on industrial microbiology.

His years as a teacher of science, and later as Dean of Science have enabled him to contribute generously of his time and effort for the continued improvement of all those things which result in the better pursuit of science, in the making of better scientists, combined with the development of finer men.

Refrigeration in a Super Market

THE facilities and activities behind the scenes that make possible the supply of fresh and appetizing perishable foods at the food markets are little known to most persons. The constant availability of a wide variety of seasonable and out-of-season domestic and imported fruits and vegetables, seafood, and meats is accepted as commonplace by housewives of the country.



Full-color enlargements of the above cutaway view of a typical food market are being offered to members of market management and the general public by the Armstrong Cork Company. The view was presented in a page advertisement in the March 11 issue of The Saturday Evening Post. Cooperating with Armstrong in the presentation was the National Association of Retail Grocers. The 21x22 in. enlargements, suitable for framing, may be obtained by writing to the Armstrong Cork Company, Lancaster, Pa.

In an effort to tell the story of this modern miracle of supply to the general public, the Armstrong Cork Company in cooperation with the National Association of Retail Grocers is presenting a full-color page entitled "Behind the Scenes in a Food Market" in the March 11 issue of The Saturday Evening Post.

The advertisement is one of a series designed to show how and where insulation is used in various commercial and industrial enterprises.

By means of a graphic cutaway view of a typical food market and accompanying editorial explanation, the advertisement tells briefly how modern refrigeration, cold storage, and perishable food handling "know how" have made modern food market distribution possible.

Canadian Cold Storage Holdings

THE Dominion Bureau of Statistics of Canada, Agricultural Branch, reports the following commodities held in cold storage on March 1, 1950.

Apples in cold storage on March 1, 1950 amounted to 2,556,605 bu. as compared with 1,352,887 bu. March 1, 1949 and 5,004,513 bu. February 1, 1950.

Frozen fruit holdings in storages and factories March 1, 1950 amounted to 12,128,000 lbs. as compared with 14,836,000 lbs. March 1, 1949 and 13,445,000 lbs. February 1, 1950.

Stocks of frozen vegetables in storages and factories on March 1, 1950 amounted to 5,844,000 lbs. compared with 6,167,000 lbs. March 1, 1949 and 6,242,000 lbs. Feb. 1, 1950.

Central Cold Storage Directors

THE Central Cold Storage Co., Chicago, Ill., has elected H. V. McNamara, president of the National Tea Co., and Saul Stone, president of Saul Stone Co., as directors.

Colquitt New Secretary, N.A.R.W.

THE National Association of Refrigerated Warehouses has appointed Joseph H. Colquitt of Washington, D. C., its new Secretary according to an announcement by William Dalton, Executive Vice President of N.A.R.W. The appointment was made at the recent 59th Annual Meeting of N.A.R.W. in Chicago.

Mr. Colquitt joined the N.A.R.W. staff in 1946 and prior to his appointment as Secretary held the position of Assistant to the Executive Vice-president. He succeeds W. M. O'Keefe who died last December.

Joe Colquitt

Curry Joins N.A.R.W. Staff

THE appointment of Richard F. Curry as special assistant to the executive vice president has been announced by the Association of Refrigerated Warehouses. He assumes the duties formerly handled by Joseph Colquitt who has been advanced to secretary, and will also handle public relation aspects of the association. Mr. Curry is a native Oklahoman, born and raised in Tulsa. His background includes education in public relations through special courses at American University, Washington, D. C.; experience in private business in Pittsburgh, Pa. and Washington, D. C.; several years with the District of Columbia Government as a procurement program coordinator. In 1945 he joined the American Council on Public Relations (now part of the Public Relations Society of America). After two years in the advertising business in San Francisco he returned to Washington and N.A.R.W.

Richard F. Curry

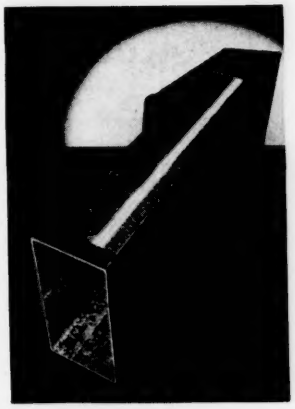
Manhattan Refrigerating New Directors

THE election of Walter H. Wheeler, Jr., and Mrs. Louis J. Aieta as directors has been announced by the Manhattan Refrigerating Co., New York. Mr. Wheeler is president of Pitney-Bowes, Inc. In addition to her business activities, Mrs. Aieta is president of the women's auxiliary of St. Clare's Hospital, New York, and is a consultant for the Catholic International Union for Social Service, Brussels, Belgium, at the United Nations.

Cold Storage Co. Enlarges Facilities

THE Pajaro Valley Cold Storage Co., Watsonville, Calif., recently announced it will increase its facilities to provide storage of 100,000 more boxes than the present total of 350,000 containers, with cost of improvements approximating $100,000. Cost of construction will be in the neighborhood of $55,800 while the balance will be expended for equipment. It is expected to be completed within four months.

KNICKERBOCKER PRODUCTS ON DISPLAY



If It's An ICE CAN

KNICKERBOCKER can build it.

LARGE - SMALL; WELDED - RIVETED
HIGH PRESSURE - LOW PRESSURE
AND

MULTIPLE CAN GRIDS TO LIFT ANY NUMBER AND SIZE ICE CAN AT ONE TIME.

The ACCURATE CAN FILLER
Always the same Amount of Water and SANITARY!

FROZEN FOOD LOCKERS
Any Size Any Desired Combination of Door and Drawer Compartments

CORE FILLERS — CORE SUCKERS — BRINE TESTING KITS — FISH PANS
FISH FREEZER TRUCKS — LOCKER KEY CABINETS

"Built Stronger to last Longer"

AT YOUR SERVICE — REPRESENTATIVES EVERYWHERE

Phone: 7-5519 **Write** **Wire**

Cable Address: KNICSTACO

KNICKERBOCKER STAMPING COMPANY

Parkersburg, W. Va.

Refrigerated Warehousing Industry

Modern Material Handling Methods Installed in

New Quincy Market Addition to Watertown Freezer Warehouse

LESS than two years ago Quincy Market Cold Storage & Warehouse Co., Boston, opened a new freezer storage of 1,200,000 cu. ft. in nearby Watertown **(Ice and Refrigeration, September 1948, Page 21.)** Now a new section is being added to the plant to increase the total refrigerated space by 75 percent. It is divided into two thirds freezer and one third cooler space. The new addition will have 32,000 sq. ft. and 600,000 cu. ft. of freezer capacity in one room designed as a first floor extension to the existing 2-story freezer, plus a basement providing 32,000 sq. ft. and 300,000 cu. ft. of cooler capacity. This extends the present building 153 feet and has the same depth of 213 feet.

Though differing somewhat in concept, and incorporating details of construction not found in the present structure, the new extension has been designed to be adjustable to warehousing and material handling methods which have proven successful in the existing building. Column spacing, ceiling height, floor capacity, and other basic dimensions of the building conform to those required for unit pallet load storage and handling.

The main floor, which is at tail-gate height, will be below zero storage with a clear height under all obstructions, such as coils and lights, of 17½ feet. The entire area, with the exception of a corridor serving as a receiving area from the adjacent siding, will be a single large storage room. The basement, which has a ceiling height of ten feet, will be kept at a temperature above 32 F, and is intended for use as a cooler only. Access to and from the basement will be entirely independent of the freezer section.

Construction Details

The framing of the new building will be reinforced concrete. Where necessary for various reasons the walls will be of brick masonry, matching the general appearance of the existing structure. Wherever possible the exterior walls will be of vertical fluted aluminum panels which serve the dual purpose of closure walls and vapor-seal, and at the same time contribute somewhat to the wall insulation.

The floor and roof slabs are of particular interest since they have been designed to meet the requirements peculiar to cold storage buildings.

The first floor slab, with a carrying capacity of 600 lbs. per square foot is so designed as to present a completely flat surface on the under-side for the insulation. In fact, six inches of cork insulation and the sheet aluminum vapor seal will be installed on the form-work before the concrete floor slab is poured. After the forms are removed the vapor seal will be visible from below for inspection and maintenance.

The roof slab is of the same design, namely a completely flat surface unbroken by beams, girders, and other obstructions, whereas the insulation and vapor seal are installed on top of the roof slab. The unbroken under-surface of the roof slab removes all possibility of air pockets above the coils, reduces the overall height needed to give the required minimum clearance; and makes available the entire ceiling area for coils, with no allowances necessary for the usual drop-panels and column capitals.

It is felt that this type of construction presents several various advantages for cold storage construction. The cost of obtaining the advantages is offset by the saving in construction of forms, which are easier and simpler to construct than those required by conventional methods.

The roof itself will be level, and will be kept permanently flooded by water to a depth of one or two inches.

Insulation

Roof insulation will be 12 in. of corkboard, laid in two courses of 6 in. each. Wall insulation will be, generally speaking, 8 in. of corkboard. Floor insulation will be 6 in. of corkboard. The insulation and vapor seal envelope will be broken only by the basement columns.

Interior partitions between the receiving and shipping room will be reflective aluminum foil, as used so successfully in the existing building.

Refrigeration will be an extension of the existing brine-circulating system. The present compressors were installed with sufficient capacity to provide for the additional 60,000 lineal feet of 2 in. pipe coils.

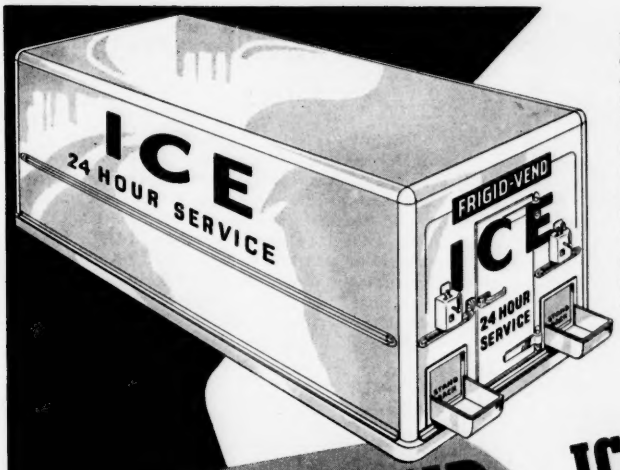
Improved Illumination

Stack lighting in the new extension will be by means of 150 watt sealed-beam type spotlights so placed in the aisles that they will give light for the entire depth of the stack, even when the opening into the stack is only the width of a single pallet. The conventional reflector-type lights have been found to have a serious shortcoming in that they are often blocked by stacked goods, leaving the workman in shadow or total darkness. To alleviate this situation by means of added reflector-type lights would result in an inordinate number of fixtures. It is felt that the use of the sealed beam spotlights which are now available with inexpensive vapor proof fixtures will provide much more efficient lighting for palletized operation at a moderate cost.

Another feature of the stack lighting is the control circuits by means of which the fork-truck operator will control lights in the area he is entering or leaving without moving from his truck. As the driver approaches the section in which he is to work, he will press a button on his truck, holding it down as he passes over a marked spot on the floors. This will light the stack lights in adjacent area. As the driver leaves the area, he again pushes the button as he passes over the marked section of the floor, and the lights are turned off automatically by an induction coil mechanism.

The stack lights are in addition to a moderate number of aisle lights which will operate more or less continuously, and will operate by means of switches at each of the entrance doors.

Construction of the extension has been materially helped by the mild weather up to February and completion is expected by early summer.



You can purchase a Frigid-Vend Ice Station completely insulated and with refrigeration or, if you prefer, you can buy a Frigid-Vend Ice Station less insulation and refrigeration. You can have this work done locally.

REFRIGERATION: 1½ H.P. condensing unit with banks of vacuum cold plate evaporators (more effective than coils). Guaranteed to maintain below freezing temperature with outside temperatures of 100°.

COIN MECHANISM: Lever operated, positive delivery, rejects slugs; also returns money when machine is empty.

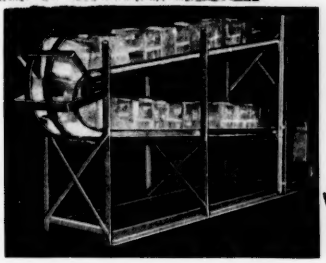
FRIGID-VEND ICE STATION

Fireproof

Vends Blocked Cubed and Sized Ice

The Station will vend four kinds of ice, two sizes of blocked ice as well as cubes or crushed ice in bags or packages. Or if you prefer you can vend any smaller combination of these four types.

Vending mechanism is positive and fool-proof. Vending lever is clutch operated, preventing breakage of handle and damage to mechanism. A customer, after insertion of money, can receive only one unit of ice at a time. Jackpot operation is impossible. Coin mechanism rejects slugs and returns money when machine is empty. In appearance, and in profitable operation, a complete Frigid-Vend Ice Station is all you could ask for.



GRAVITY ACTION DOUBLE DECK ICE BLOCK VENDORS

All steel construction with stainless steel covered tracks. ½ H. P. motor with gear head operates tripper bars during vending operation.

Capacity: 25 lb. ice blocks model—27 or 54 blocks
50 lb. ice blocks model—19 or 38 blocks

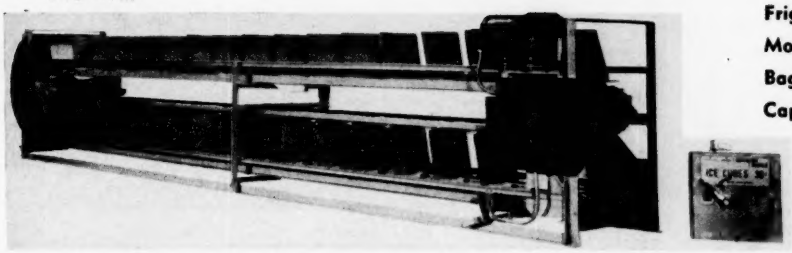
FRIGID-VEND BAG, PACKAGE AND ICE BLOCK VENDORS CAN BE PURCHASED SEPARATELY FOR INSTALLATION IN ANY ICE STORAGE ROOM.

Before You Buy, Get All the Facts. Write for information.
Prompt delivery on all Frigid-Vend Equipment.

THERMO CUBER

THERMO CUBER CO., INC.

2124 NORTH SOUTHPORT AVE., CHICAGO 14



Frigid Vend
Model 2-A-15
Bag Vendor
Capacity 32 bags

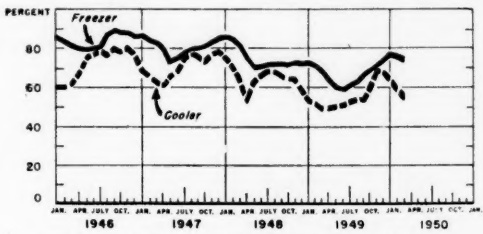
Patent Pending

Cold Storage Holdings—Cooler and Freezer Space Continues Decline

OCCUPANCY in public cooler storages was 55 percent on March 1, down 4 points since last month. The occupancy level reported on the first of this month was 6 percentage points below average; the decline in cooler occupancy was twice the average February to March change. All regions except the New England, Middle Atlantic and Pacific reported cooler occupancy to be equal to or greater than the national average of 55 percent. Public freezer occupancy on March 1 declined 1 point to 74 percent. Freezer occupancy was only 2 points below average for this time of year and was 6 points above the occupancy reported a year ago. Whereas freezer occupancy normally declines 3 points from February to March, the decline this year was 1 point only.

Freezer storage occupancy was 80 percent or better in the New England, West North Central, and East South Central regions; the lowest freezer occupancy level reported on March 1 was in the West South Central—58 percent. In Boston, Milwaukee, Minneapolis, St. Louis, Portland, and Los Angeles as the reported freezer occupancy in these cities was 85 percent or better on the first of the month.

Cooler and freezer-held commodities, at 1.7 billion pounds each, totaled 3.4 billion pounds on March 1. This was a decrease of a little less than a half billion pounds of cooler commodities and 126 million pounds of freezer commodities since February 1. The removal of apples and pears from storage accounted for more than three-fourths of the cooler-weight decrease. All freezer items, except frozen eggs and pork, showed a net reduction in stocks since February, with frozen fruits and vegetables, poultry, and beef accounting for most of the decrease. Cooler-held commodities were about average, while freezer commodities were 173 million pounds above average.



Occupancy in Refrigerated Warehouses 1946-1950

Stocks of fresh apples in storage on March were down to 13 million bushels—a decrease of 7 million bushels since last month. Fresh pears decreased by almost half a million bushels, leaving 604 thousand bushels in storage on the first of this month. Frozen fruits in storage were below average for this time of year and the stocks of a year ago, with 265 million pounds on hand March 1. A year ago there were 301 million pounds of frozen fruits in storage

On the average, a little more than half of the cooler space in key cities was utilized on March 1. In Minneapolis, St. Louis, and Norfolk, however, cooler space was more than 80 percent filled. Freezer storage space was near filled

TABLE I—COLD STORAGE HOLDINGS IN PUBLIC, PRIVATE AND SEMI-PRIVATE WAREHOUSES, APPLE HOUSES AND MEAT PACKING PLANTS (000 LBS.)

	March 1, 1950	Feb. 1, 1950	March 1, 1949	Five-year Average
Meat and meat products, lbs.	816,653	849,825	903,050	792,553
Lard and rendered pork fat, lbs.	80,847	92,949	179,628	117,911
Frozen poultry, lbs.	259,144	295,736	131,496	243,663
Creamery butter, lbs.	94,085	103,657	8,718	15,311
American cheese, lbs.	149,867	159,906	111,073	95,888
Other cheese, lbs.	11,784	13,559	13,237	13,342
Shell eggs, cases	743	380	144	568
Frozen eggs, lbs.	72,986	55,052	58,621	91,250
Apples, bu.	12,794	19,573	9,028	12,703
Frozen fruits, lbs.	264,681	279,255	301,249	316,562
Frozen vegetables, lbs.	304,796	339,316	229,506	206,596
Frozen fish, lbs.	106,346	125,516	104,138	88,917

TABLE II—PERCENTAGE OF SPACE OCCUPIED BY PUBLIC COLD STORAGE WAREHOUSES (APPLE HOUSES EXCLUDED)

	Net Piling Space (000 cu. ft.)		March 1, 1950 (%)		Feb. 1, 1950 (%)		March 1, 1949 (%)		5-Year Average (%)	
	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer
New England	3,030	5,399	54	80	56	84	35	70	53	69
Middle Atlantic	38,149	29,773	49	72	56	71	44	62	58	78
East North Central	27,453	28,799	59	75	58	71	50	69	62	77
West North Central	9,941	14,706	72	83	73	83	50	83	61	77
South Atlantic	8,418	5,342	56	74	60	77	49	81	63	84
East South Central	4,006	3,917	66	80	69	82	58	88	69	78
West South Central	6,723	6,123	60	58	58	58	68	65	68	74
Mountain	1,578	1,868	55	78	51	80	40	59	64	83
Pacific	16,294	18,402	49	68	57	75	47	58	61	70
United States	115,592	114,329	55	74	59	75	48	68	61	76

TABLE III—PERCENTAGE OF SPACE OCCUPIED BY PRIVATE AND SEMI-PRIVATE REFRIGERATED WAREHOUSES AND MEAT PACKING PLANTS (APPLE HOUSES EXCLUDED)

	Private and Semi-Private Warehouses						Meat Packing Establishments					
	Net Piling Space (000 Cu. Ft.)		Space Occupied—Per Cent March 1, 1950		Feb. 1, 1950		Net Piling Space (000 Cu. Ft.)		Space Occupied March 1, 1950		Feb. 1, 1950	
	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer
New England	85	113	49	73	47	72						
Middle Atlantic	1,740	1,234	44	76	52	77	1,866	292	88	85	89	89
East North Central	2,912	1,460	70	46	76	49	4,569	1,499	87	88	88	89
West North Central	801	2,356	80	82	88	84	14,054	5,979	93	90	89	88
South Atlantic	480	1,318	33	43	44	43	1,377	243	84	98	85	98
East South Central							403	100	93	94	85	94
West South Central	202	31	42	16	39	16	559	148	100	100	96	97
Mountain	117	38	90	79	86	74	608	383	90	99	96	96
Pacific	3,169	2,988	25	62	39	72	2,834	589	93	97	93	92
United States	9,506	9,538	49	64	57	67	26,270	9,233	91	91	90	90

NOTE: Blank spaces indicate that insufficient returns were received.

IN-SPECK-SHUN!

NOT ONCE BUT *TWICE* FOR EACH!

Yes, Sir! Every cylinder of Mathieson Ammonia must pass two rigid inspections — one before and one after filling. The first checks valves and cylinder condition; the second seeks for the possible presence of non-condensable gases, moisture or impurities. Such searching scrutiny guards against corrosion, rusting or clogging — assures delivery to you, in tip-top condition, of cylinder after cylinder of the purest ammonia obtainable. And you'll always get prompt deliveries of that good Mathieson Ammonia — in 100- and 150-lb. cylinders—from any of 40 conveniently located warehouses. Write for booklet: "Mathieson Anhydrous Ammonia". Mathieson Chemical Corporation, Mathieson Building, Baltimore 3, Maryland.

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ICE CUBES *Automatically*

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while for the 5-year average, ended 1949, March 1 holdings were 317 million pounds. The net decrease of 15 million pounds since last month compares with 16 million pounds withdrawn last year and average withdrawals of 24 million pounds. Increases in stocks during February of fruit juices and purees and orange concentrate countered the net withdrawals of most fruit items.

A greater than average net reduction in stocks of frozen vegetables left 305 million pounds in storage on March 1. During February approximately 35 million pounds of frozen vegetables moved from storage compared with 24 million pounds normally withdrawn at this time of year. All frozen vegetable items showed a net decrease in stocks since last month. The greatest net change was in the stocks of green peas which declined 11 million pounds, followed by lima beans with a decrease of 6 million pounds.

Creamery butter holdings were the second highest on record for this time of year, with 94 million pounds in storage. More than four-fifths of this amount, however, was held for the account of Government agencies. Total stocks of cheese in storage on the first of the month amounted to 165 million pounds of which 150 million pounds were American Cheddar. Despite a net reduction of 10 million pounds in America's cheese holdings since last month, more Cheddar cheese was in storage this month than any March 1 on record. However, of this record amount, about 20 million pounds were government-owned. Shell egg stocks almost doubled since last month. Total eggs in storage amounted to 743 thousands cases, more than half of which were stored in the East North Central area.

Frozen eggs in storage increased to 73 million pounds; normally there is a decrease in stocks during this time of year. Despite a contra-seasonal increase, frozen egg stocks were 18 million pounds below average, but were above the stocks of a year ago by 14 million pounds.

Net withdrawals of frozen poultry from storage during February amounted to 37 million pounds—about 54 percent greater than average for this time of year. Poultry in storage on March 1 totaled 259 million pounds, compared with 131 million pounds in store last year. Government-owned poultry in storage amounted to 6 million pounds.

Stocks of fowls and turkeys showed the greatest net decrease in stocks during February—the former decreased 15 million pounds, the latter 10 million pounds. The 128 million pounds of turkeys in storage were the second highest March 1 holdings on record; on March 1, 1946, 135 million pounds of turkeys were in storage.

March 1 holdings of beef were below average. The 112 million pounds reported on hand compares with average March 1 stocks of 156 million pounds. Less frozen beef was in storage than on any previous March, since 1943. Normally, frozen beef in storage on March 1 totals 145 million pounds, compared with 100 million pounds reported this month. Pork stocks, down to 574 million pounds on March 1, were some 73 million pounds above average for this time of year. A year ago, however, pork in storage totaled 611 million pounds. Holdings of frozen pork increased during February to about 2 million pounds thereby bringing total on hand to 333 million pounds. Stocks of all meats and meat products in storage amounted to 817 million pounds, compared with 903 million pounds of a year ago and average March 1 stocks of 793 million pounds.

Frozen fishery products in storage were reduced by 20 million pounds since last month leaving 106 million pounds in storage on March 1. First-of-the-month holdings were about equal to the stocks on hand a year ago, but were almost a fifth greater than average March 1 holdings. Stocks in the New England and Middle Atlantic regions were almost evenly divided with 25 and 22 million pounds, respectively. Pacific Coast holdings totaled 18 million pounds.

Storage Outlook

Public cooler storage occupancy decreased during February at a faster rate than normally expected. During February, there was a 20 percent reduction in cooler-held commodities, whereas according to the 5-year average (1945-49) total weight in coolers normally declined 17 percent during this period. With most of the fresh pears and apples out of storage, and with the expected into-storage movement of shell eggs, public cooler occupancy should remain relatively unchanged during the month. However, should the storage of shell eggs increase significantly, public cooler occupancy on April 1 would be 1 to 2 points above the March 1 level as indicated by the average April 1 occupancy for the 10-year period ended 1949.

Public freezer occupancy should continue to decline for the next two months. The expected decrease, according to the 5-year average, is 3 points during March, but so far, the monthly decline in freezer occupancy has been less than average. During January and February, there has been a one point decline per month. A like decrease during March would place April 1 occupancy at 73 percent, which was the average occupancy level reported on April 1 for the five-year period ended 1949.

Cold Storage Stocks of Frozen Fruits and Vegetables

THIRTY-SIX percent of the frozen peach, raspberry and strawberry stocks classified by warehousemen as to container size were in consumer-size packages on February 1. The ratio of retail containers to the larger-size containers has remained at this comparatively high figure since September 1949. By comparison, from August 1947, when package size data were first collected, up to October of last year, the selected fruit items in packages of one pound or less averaged only 26 percent of the stocks classified. Coverage, however, did not change significantly during these periods. On the average, about 70 percent of the selected fruit items were classified as to package size during each of the intervals compared above.

COLD STORAGE STOCKS OF FROZEN FRUITS AND VEGETABLES IN PACKAGES OF ONE POUND OR LESS IN STORAGE FEBRUARY 1, 1950 AND JANUARY 1, 1950 (000 LBS.)

	February 1, 1950		January 1, 1950	
	Lbs.	Pct.	Lbs.	Pct.
Peaches	5,032	43	5,339	45
Raspberries	3,939	22	4,191	21
Strawberries	10,410	43	13,734	42
Asparagus	2,340	71	2,890	72
Beans, lima	17,820	60	19,722	58
Beans, snap	15,171	71	17,468	71
Corn, sweet	9,189	47	10,485	44
Peas, green	25,650	58	32,041	56
Spinach	12,619	80	13,775	82

Total stocks of the six selected frozen vegetable items in storage February 1 amounted to 231 million pounds. Of this amount, 134 million pounds, or 58 percent, were classified as to container size. A little over three-fifths of the classified stocks were reported to be in containers of one of consumer to larger-sized containers with 8 out of every 10 pounds of this commodity in storage reported to be in pound or less. Spinach continued to show the highest ratio the smaller sized containers. The proportion of asparagus and snap beans in consumer packages remained about the same as last month with 71 percent reported for each of these items. Sixty percent of the lima beans, 47 percent of the corn and 58 percent of the peas classified were in retail containers. These frozen vegetables showed slight increases over the percentages reported last month which were 58, 44 and 56 percent respectively.

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COVERING EVERY PHASE OF THE QUICK FREEZING OF PERISHABLE FOODS—PREPARATION, PACKAGING, FREEZING, STORAGE, DISTRIBUTION, DESIGN, CONSTRUCTION, EQUIPMENT, OPERATION OF LOCKER PLANTS.

Frozen Food Packers Plan Extensive Work in Research

PLANS for coping with a number of important industry problems were developed at Chicago early in February, when closed meetings of directors and committees of the National Association of Frozen Food Packers were held in conjunction with the Frozen Food Industry Convention. Announcement of these plans was made by L. S. Martin, secretary-manager of the National Association of Frozen Food Packers—who expressed confidence in the ability of the industry to make real progress during the coming year in overcoming its problems, through the action programs developed at the Chicago meetings.

In the field of food and drug administration standards, the Research and Standards Committee, under the Chairmanship of Dr. K. G. Dykstra, of Birdseye-Snider, developed a detailed plan for assembling data on frozen asparagus and peas with which to formulate an over-all united industry position which will be presented when the Food and Drug Administration holds hearings on these products. Careful preparation of data and the integration of the views of all industry factors into a consolidated position will go far in assuring that the mandatory standards issued will be compatible with the industry's practices. This program of preparation for standards hearings was approved by the N.A.F.F.P. Board of Directors.

Progress in Grade Problems

Significant progress in working out a solution to USDA grades problems was made at a meeting of the Research and Standards Committee with representatives of the Production and Marketing Administration of the U. S. Department of Agriculture. Because of persistent problems that have confronted many packers as a result of these grades, the group attending this meeting agreed to a plan whereby copies of proposed grades, prior to their issuance even as tentative grades, will be distributed by the Association to the industry men for review. In this way, the industry, through the Association, will have an opportunity to call attention to objectionable features of the grades and propose suitable revisions before the grades are issued. In addition, USDA has agreed to provide the industry with the visual aids used by federal inspectors, in order to promote better understanding of the grades by those in the industry using the grades.

In connection with legislation affecting the frozen food industry, the Legislative Committee heard a review of the current situation by Chairman O. L. Maxey of Seabrook Farms and perfected plans for action designed to protect the industry's position on the legislative front. Particular attention was given to state legislation because of the growing importance of state activities in the frozen food field.

The Warehousing and Transportation Committee discussed a number of problems in the field of rates and were favored with short talks by representatives of the American Association of Railroads and of the U. S. Department of Agriculture. The A.A.R. representatives described their work in attempting to develop an all-purpose refrigerator car and their exploration of the feasibility of palletized loading of refrigerator cars. The USDA representative described the work planned by the Department in the field of truck transportation. The committee was expanded to include a larger industry representation so that more attention may be given to transportation problems.

New Berry Developed for Freezing

A NEW variety of blackberry especially suitable for the quick-freezing process has been developed through the U. S. Department of Agriculture and the Oregon Experiment Station. Known as the Olallie, the variety is said to retain its bright luster and firm texture through freezing or canning.

The new berry produces high yields of berries that are somewhat longer than Boysen and nearly as large. The plants are of the vigorous growing, trailing type according to agricultural experts. Flavor of the berries that have been grown experimentally in California are reported as considerably better than Boysen, but in Oregon the flavor of the Olallie is not quite as high as that of Boysen in some seasons. Limited tests in the state of Washington indicate the new variety is not hardy in the northern part of the state.

The Olallie comes from a cross between a Black Logan and the Young varieties. Plants are available from commercial growers in the west, but are not being distributed by the Department of Agriculture.

Canada Relaxes Ban on Frozen Fruits

THE Canadian government has relaxed its ban on the importation of frozen vegetables from the United States. Effective July 1, Canada will permit shipments of these products into the country up to a total limit of 44 percent of the amount imported in 1946-47. The quotas also apply to canned vegetables.

Canada imposed import controls on many products, and made outright prohibition of other imports, two years ago in a move to conserve dollar exchange. Frozen vegetables and dried fruits were among the products entirely barred from entering Canada from the United States. Announcement of the liberalized quotas was made by the Canadian embassy in Washington.

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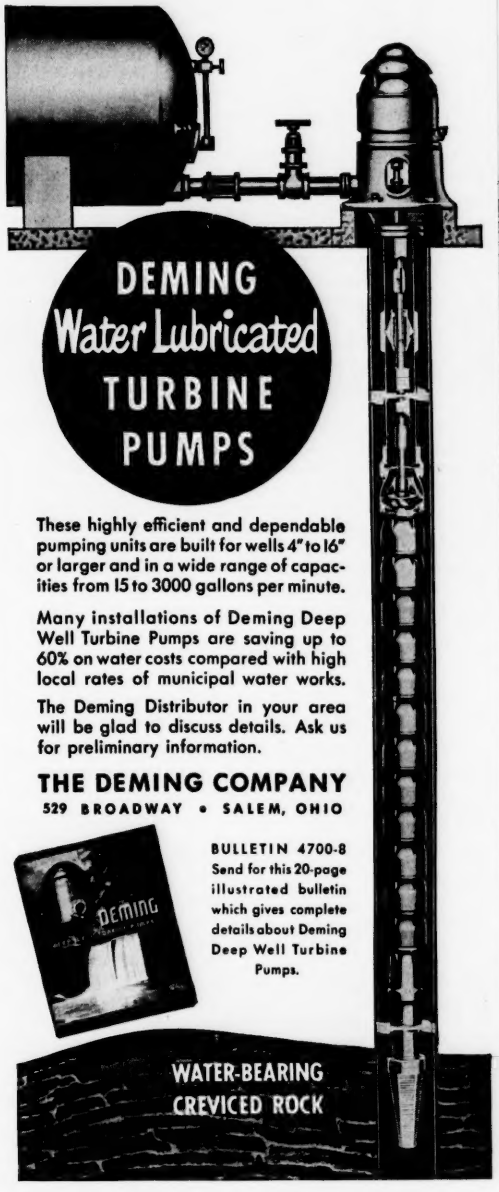
Investigate the advantages of installing a Deming Deep Well Turbine Pump . . . *Protect YOUR plant against water shortage.*



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Frozen Foods Delivered Direct From Warehouse

SOUTHERN DAIRIES, Inc., distributors in the Washington area for Seabrook Farms Frozen Foods is trying an experiment in direct-from-the-warehouse delivery of frozen foods to consumers' homes. The plan has a dual purpose: to promote the sale of home freezer cabinets, and to relieve the pinch in frozen food storage space in retail stores.

Under the marketing method, the consumer may place an order for Seabrook Farms frozen foods through any grocer who stocks the brand, or by telephoning the Southern Dairies warehouse, and giving the name of the local Seabrook Farms retailer. Orders are delivered to the consumer by refrigerated truck.

When a householder agrees to take $10 or more in frozen foods at one time and agrees further to pick up the order at the warehouse, a total discount of 10 percent of the retail price is given on fruits and vegetables, and 5 percent on fish and poultry. If a $10 order is delivered by truck to the consumer's home, the discounts also apply but are reduced to 5 percent on fruits and vegetables and 2½ percent on fish and poultry.

Retailers are protected under the arrangement by receiving a percentage of the value of each delivered order. According to Southern Dairies officials, retailers are glad to cooperate in the deal because they still "participate in the sale," but are relieved of the necessity of stocking a large volume of frozen foods when generally speaking they lack adequate cabinet space.

The initial promotion of the Southern Dairies home delivery plan was made in January and February of this year in collaboration with the Washington area stores of Sears, Roebuck & Co.

Locker Savings Down As Costs Mount

RECEIPTS of cooperative frozen food lockers the country over are, generally speaking, increasing, but increased income is more than offset by mounting operating costs, says the U. S. Department of Agriculture. In Illinois, for example, income and costs in 1948 follow the trend of the 5-year period, 1943-44 to 1945-48, when total receipts per locker rented increased 47 percent, but operating expenses went up 65 percent.

These facts are revealed in a recent study by L. B. Mann and Paul C. Wilkins of the Cooperative Research and Service Division of the Farm Credit Administration. The results of this study are available as Miscellaneous Report 135 entitled, "Frozen Food Locker Cooperatives in Illinois, 1948." A copy may be obtained from the Farm Credit Administration, U. S. Department of Agriculture, Washington 25, D. C.

The 36 associations studied operate 95 locker plants. These plants, from studies made in the past 8 years, appear to be moving out of a strictly service type business, largely carried on with farmer patrons, towards semi-commercial processing and selling operations.

The authors conclude that to meet changing conditions, including competition, higher costs, and lessened demand for rentals, these locker plants need to improve operating efficiency, increase volume, reduce costs, expand services, and do a much better job of public relations and merchandising.

Net savings in 1948 averaged $3,277 per association before paying income tax and interest and $1,620 after making these payments. These compare with $4,463 and $3,152 respectively in 1947.

Mobile Fishing Vessels

(Continued from page 24)

heavily loaded pens, is eliminated. More efficient handling and unloading practices will prevail. Since frozen fish cannot be forked there should be no fork holes in the fish to provide an entrance for bacteria or cause discolored spots on the fillets.

Reduction Plants on Shore

On shore the reduction plants will benefit through an augmented supply of waste and the medicinal and industrial oil plants will again receive a full quota of livers. Processing plants and shore labor should benefit even more because an adequate supply of frozen stock will always be available for filleting. Marketing fluctuations due to either a dearth or a glut of landings should be moderated, and shore labor in the processing plant should be able to work a normal week throughout most of the year. Compared with control samples, gutted and iced in the usual manner the round fish frozen at sea, according to preliminary tests, have a "sea-fresh" taste, a lesser trimethylamine content, and possibly may yield a greater recovery in fillets. Consumers should be offered, therefore, uniformly higher quality frozen fillets at no greater price and, conceivably, may increase their consumption.

The most desirable procedures and equipment for freezing at sea as described remain to be worked out. It is possible a vessel may not freeze its entire catch. Economic and other considerations may dictate that freezing the first few days' catch is sufficient. This, alone, would simplify the equipment necessary and reduce the space required while, at the same time, improving the quality of that portion of the catch which brings a lower price and often adversely affects the market for the higher quality catch made during the last days of fishing.

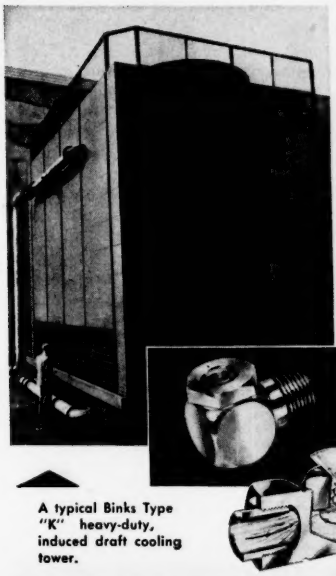
With so many apparent advantages, and with imports of frozen fillets pressing even more threateningly, it would seem that freezing at sea, and thawing, filleting and refreezing on shore may become a common practice with the accompanying effect of making our groundfish trawlers as complete converts to freezing installations as our own tuna clippers.

Nearly 4 Billion Dollars Loaned to Price Support Program

IT HAS been reported by Ralph S. Trigg, president of the Commodity Credit Corporation, U. S. Department of Agriculture, that $3,947,424,000 was invested in CCC price-support programs loans and inventories as of January 31, 1950, and that the Corporation sustained a net realized loss of $96,404,000 in carrying out this program during the current fiscal year through January. (The net realized loss on the CCC price-support program for the fiscal year ended June 30, 1949, was $254,000,000.)

Of the total investment of $3,947,424,000 loans outstanding totaled $2,204,023,000 (including $924,903,000 of commodity loans held by lending agencies, $972,784,000 held by the CCC, and $306,336,000 of loans approved but not fully processed) while inventories acquired under loan, purchase agreement, and direct purchase operations represented an investment of $1,743,401,000.

Price-support operations in corn, wheat, cotton and tobacco accounted for the bulk of the loan total. 75,918,088 pounds of dried eggs valued at $98,116,167 and 100,736,962 pounds of butter listed at $62,434,199 are included in the total.



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Clog-proof Rotojet nozzles are used in both the spray-filled and deck-filled towers.

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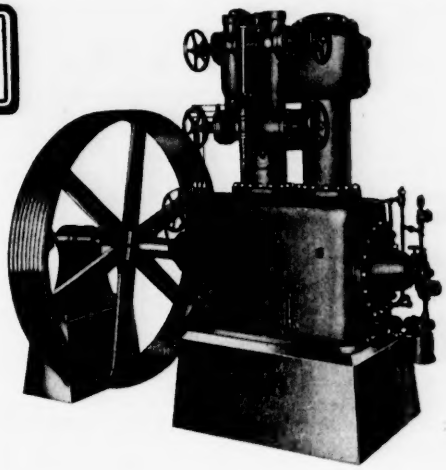

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The P.M.A. and Refrigerated Warehousing

(Continued from page 53)

the letter and spirit of the law. But even if a Congressional directive were lacking, the Corporation would still make a maximum use of commercial facilities, because such use means a broad, flexible type of operation that would otherwise be impossible.

Termination of Leases on Refrigerated Space

The Department of Agriculture was faced with a shortage of cold storage space during the war, when primary emphasis was being placed on procurement of food for our armed forces and allies. To alleviate this shortage, the Department in 1942 leased from the City of New York the Municipal Terminal Market, located in the Bronx. With the shortage of space becoming acute again as we got deeper and deeper into the war effort, the Department in 1944 leased a limestone mine near Atchison, Kansas, which, with installation of equipment, became a satisfactory storage facility.

On September 20, 1949, Ralph S. Trigg, President of the Commodity Credit Corporation and Administrator of PMA, announced that the Corporation was terminating its lease on the Bronx market. In making this announcement, Mr. Trigg said, "Termination of the lease on this large cold-storage warehouse is in line with CCC's policy of utilizing, to the fullest extent possible, private facilities and normal channels of trade in carrying on its operations." Mr. Trigg's statement of policy was completely sincere, you may be sure, and it reflects the current policy of PMA and the Corporation.

Now, if it is the policy to turn cold-storage back to the private trade, why doesn't the Corporation terminate its lease on the Natural Cooler Storage, the so-called cave, at Atchison? Here is why: The Corporation has an investment in the cave, including leasehold improvement, machinery, and equipment, of over $2,000,000. To get out of the cave at this time definitely would not be in the best interests of the Government, because it would mean a heavy loss on investment. I will say, however, that **the Corporation is not looking around for any more caves. I will say, too, that if the Corporation hadn't already made an investment in the cave, and that if the matter were up for consideration, it probably wouldn't make such an investment today.**

As a matter of fact the Corporation could not decide, on its own, to expand Government-controlled cold-storage capacity. The amendment to the Charter Act provides that "no refrigerated cold storage facilities shall be constructed or purchased except with funds specifically provided by Congress for that purpose." I hope I have chased away any fears you might have that the Corporation is out to take over the cold-storage industry.

I want to turn now to some general policies of PMA and the Corporation with respect to storage, all types of storage, in commercial facilities.

Selection of Storage Facilities

Location looms large when it comes to the selection of commercial facilities for the storage of CCC-owned commodities. It is the policy to store at the locations which offer the most economical transportation and storage costs. Where outlets have been established in advance for the disposition of commodities, it is the policy to store as closely as possible to the area of use or port of export. Where no outlets have been developed, the policy is to store as closely as possible to the source of supply in order that handling and transportation costs be held to a minimum.

When it comes to selecting a warehouse, it is the policy to examine those scheduled to store Corporation-owned commodities and to make subsequent examinations. In examining warehouses, such items as the following are checked: The warehouseman must have sufficient resources to assure the Corporation that he is financially responsible. He must be able to furnish a performance bond by a separate corporate surety. He must furnish a copy of his public tariff and regulations. He must know how to store commodities and must keep an eye on the keeping quality of the commodities in his custody.

The facility must be of sound construction, in good repair, and be equipped for handling and storing commodities. The facility must be under the control of the warehouseman at all times. The insurance rate must not be excessive, either for the buildings or commodities. The facility must not be located near a fire or flood hazard. Evidence of licensing must be made available where State laws require such licensing.

The refrigerated warehouse industry proved during the war that it could rise to any emergency. It has shown, during a rather turbulent post-war period, that it is willing to shoulder its responsibilities. I am sure, as we pass through a troublesome transition from a wartime to a peacetime economy, that the industry will continue to cooperate with government in the common good. Such a combination as that, industry and government, ought to be an unbeatable team.

Phoenix Ordinance Regulates Air Conditioning Installations

DRAFTING of an ordinance for regulating installations to cool buildings and homes by refrigeration evaporation has been completed at Phoenix, Ariz. The ordinance was prepared by a committee representing the cooler and refrigeration industry of the Arizona metropolis in collaboration with the Phoenix city engineering staff. Early in March the ordinance was under examination by the city council preliminary to its presentation for discussion at an early council session. It is expected that the measure will be adopted with only minor changes before early summer.

Under the provisions of the ordinance, every concern and person engaged in installing or servicing cooling equipment will have to be licensed and bonded. Provision is also made for establishment of a municipal air conditioning board which will be empowered to conduct qualification examinations made mandatory by the ordinance. The ordinance requires the air conditioning board to employ an air conditioning inspector, whose salary and expenses are expected to be met out of license fees. His duties are outlined in the ordinance as enforcer of the statute with respect to standards of equipment, installation and operation.

When the ordinance is officially adopted, it will make Phoenix the first city in Arizona and the contiguous southwestern area with such complete regulations for air conditioning. The first ordinance in Arizona relating to coolers was adopted at Yuma in 1947, but it does not go beyond forbidding that water from evaporative coolers be allowed to run on the ground and form mosquito-breeding pools.

At one time Phoenix claimed the title of "Air-conditioning Capital of the World." It has since admitted, however, that the first cooler was installed in 1930 in an Indio, Calif., pool hall for the comfort of workmen who were building the Los Angeles Aqueduct.

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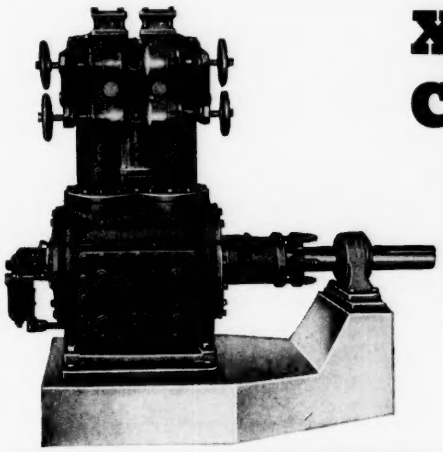

XL AMMONIA COMPRESSORS

HAVE LONG LIFE and DEPENDABILITY

XL Ammonia compressors are equipped with roller bearings—ring plate valves —force feed lubrication for slow or high speed operation.

Also manufacturers of Ammonia Valves in all sizes up to 8 inches.

HILGER CHIP ICE MANUFACTURING UNITS

Now available in capacities to make 100 to 3000 pounds of ice per HOUR. For FISH—POULTRY—SAUSAGE and VEGETABLE PROCESSING PLANTS.

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AIRCRAFT PRODUCTION ENGINEERS

Manufacturers of Freon and Ammonia Refrigerating and Ice Making Machinery, Ammonia Valves and Fittings.

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Cable Address: "AIRPROENG"

CHICAGO 36, ILLINOIS
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Rhode Island To License Refrigeration Engineers and Steam Boiler Operators

REFRIGERATION engineers and steam boiler operators in Rhode Island would be licensed by the State Department of Labor under terms of a bill introduced in the Rhode Island Legislature by Senator Raymond A. McCabe, Providence. The proposed legislation would authorize the state labor director to name a chief examiner at $5,000 a year to administer the act. The appointee would have to be a practical stationary engineer of not less than ten years' experience.

Under the bill, no person would be permitted to operate or have direct charge of any stationary engine or stationary steam boiler of more than 30 hp, or of any refrigerating plant of more than 50 ton capacity without first obtaining a state license. A five-member board of review to consider appeals from decisions of the chief examiner would be created in the state labor department. Board members would be named by the labor director subject to approval by the governor. Violations of the proposed law would be punishable by fines of from $10 to $100 for each offense.

Ice Driver Honored for Safety Record

NICK ANDERSON, a driver for the Crystal Ice and Cold Storage Co., of Phoenix, Ariz., was selected by the Arizona Motor Transport Association in February as its "Driver of the Month" in recognition of his safe-driving record.

The refrigeration company employe was honored February 15 by 60 association members for having driven 494,000 miles without an accident.

A speaker at the presentation of the award was State Representative R. H. Wallace, who urged adoption of a uniform traffic code in Arizona. Enactment of such a code was scheduled to come before a special session of the Arizona Legislature which convened in late February.

Milk Vending Machine in New York

MILK vending machines, refrigerated coin-operated, are being installed in selected sections of New York City on a trial basis. A number of those on trial are reported to have produced excellent results. If they prove as popular as hoped by their sponsors, their use may revolutionize the delivery of milk, especially to apartment dwellers. Each machine carries a maximum of 150 paper quart containers, is serviced daily, and can take any combination of coins and make the proper change.

The machines have been developed and produced under the direction of the City Milk Company of Maspeth Queens, N. Y. The company points out that they offer an advantage to the consumer of being able to purchase refrigerated milk near the door in the required amount and avoiding the possibility of man-delivered milk standing in doorways for a considerable period.

A.S.H.V.E. To Meet in Canada

IN a hands across the border gesture, the American Society of Heating and Ventilating Engineers will hold its 1950 semi-annual meeting in Canada at the Royal Muskoka Hotel in the Muskoka Lakes district, directly north of Toronto, June 18-21. The Ontario Chapter, Toronto, of the A.S.H.V.E. will act as host. Programs have been prepared to permit presentation of technical papers in the morning, with afternoons for boat trips, golf and other forms of entertainment.

ASSOCIATION DIRECTORY

AMERICAN INSTITUTE OF REFRIGERATION
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Mount Taylor, Secretary, 1706 L St., N. W.,
Washington 6, D. C.

NATIONAL ASSOCIATION OF REFRIGERATED WAREHOUSES
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MISSOURI ICE MANUFACTURERS' ASSOCIATION
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Frank Vogelsang, Secretary, W. T. Good Ice Co., Lincoln, Nebr.

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Raymond Wilber, Secretary, 419 Boyleston St., Boston, Mass.

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Ed. H. Shea, Secretary, 2027 N.E. Schuyler, Portland, Oreg.

OHIO ASSOCIATION OF ICE INDUSTRIES
Guy W. Jacobs, Secretary, The Steubenville Ice Co., Steubenville, Ohio

OKLAHOMA ASSOCIATION OF ICE INDUSTRIES
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SOUTHERN ICE EXCHANGE
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TRI-STATE ASSOCIATION OF ICE INDUSTRIES
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VIRGINIA ICE MANUFACTURERS' ASSOCIATION
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WEST VIRGINIA ASSOCIATION OF ICE INDUSTRIES
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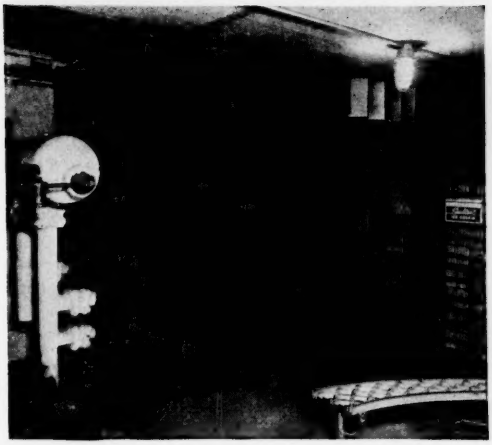
Paul F. Hoff, Secretary, 1300 East Locust St., Milwaukee, Wis.

COMING CONVENTIONS

EASTERN STATES ICE ASSOCIATION
April 12-14, 1950
Haddon Hall Hotel, Atlantic City, N. J.
SAMUEL FREER, Secretary

MOUNTAIN STATES ASSOCIATION OF ICE INDUSTRIES
April 27-28, 1950
Plains Hotel, Cheyenne, Wyo.
J. REIMER ESPY, Secretary



Do you want
COST-REDUCING
Freezing or Cold Storage

The Niagara "No Frost" Method saves you from any loss, delay, shut-down, or diminished efficiency from frost on your refrigerating coils, at any time. You always get the full capacity that you paid for when you bought your refrigerating plant.

See how this means money savings. You run with higher suction pressures and lower head pressures, saving power. Your wear and tear and maintenance is lower; you save the loss of production and the labor used in defrosting periods. You save the power that is wasted when refrigeration is supplied through coils that are frost-coated.

The Niagara "No Frost Method" is not just a means of defrosting. It is a means of operating refrigeration without the formation of frost at any time, reducing costs, quickly paying for itself.

There are hundreds of successful "No Frost" users who say it is saving money, increasing production and improving quality for them every day . . . in every type of refrigeration installation requiring temperatures below freezing . . . in food freezing, ice cream, cold storage and in special industrial applications

Write for Niagara Bulletin No. 105 for further information

NIAGARA BLOWER COMPANY

Over 35 Years of Service in Industrial Air Engineering

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District Engineers in Principal Cities

INDUSTRIAL COOLING HEATING • DRYING

NIAGARA

HUMIDIFYING • AIR ENGINEERING EQUIPMENT

"I depend on BARRETT"

"Yes, I always buy Barrett Standard Anhydrous Ammonia. I know from long experience that the name Barrett means unexcelled purity, consistent high quality and dependable service.

"I never worry or fret after I place my order. My shipments arrive on time . . . the cylinder valves are in good working condition . . . and Barrett picks up empties promptly.

"When I need help on a technical problem, I get the expert advice of Barrett's trained technicians, without charge or obligation. Barrett is the name to remember when you need ammonia!"

Barrett STANDARD ANHYDROUS AMMONIA

Available in 150, 100 and 50-pound cylinders for speedy delivery from stock points conveniently located from coast to coast.

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ALLIED CHEMICAL & DYE CORPORATION

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NEW PLANTS AND IMPROVEMENTS

Information pertaining to proposed new plants, utilizing refrigerating equipment, as well as additions, improvements, and rehabilitation of existing plants. News items of such new plants and additions is invited for publication in this department.

ARKANSAS

Paragould, Ark.—The Paragould Ice Co. has installed a JB2-12 Polar Junior Station and two model No. 14 Polar vendors.

CANADA

Montreal, Que.—H. Brunelle, Ltd. is building a new 60 ton ice plant, also J. A. Thibault Co. is erecting an additional ice plant.

CALIFORNIA

Watsonville, Calif.—The Pajaro Valley Cold Storage Co. here is increasing its facilities to provide storage of 100,000 additional boxes than the present total of 350,000 containers. Cost of improvements including construction and equipment will be approximately $100,000.

GEORGIA

Monroe, Ga.—The Monroe Ice Commission recently decided to spend $7,000 for new equipment and improvements for the municipally owned ice plant. A new auxiliary compressor unit will be installed which will enable an increase in the daily capacity of 15 tons up to 17 tons. Ice storage rooms will be remodeled so that overnight cold storage facilities will be made available to the public.

IOWA

Burlington, Iowa—The Heil Company has installed three model No. 20 Polar vendors.

MASSACHUSETTS

Watertown, Mass.—Quincy Market Cold Storage & Warehouse Co., here, is adding a new section to its plant to increase the total refrigerated space by 75 percent. It is divided into two-thirds freezer and one-third cooler space

MICHIGAN

Detroit, Mich.—Two model No. 14 cake ice vendors and two model No. 14 Polar bag ice vendors will be in operation for Consumer's Public Service Company here.

Detroit, Mich.—Grand Trunk Warehouse and Cold Storage Co., 1821 Ferry Ave., is erecting a new refrigerated warehouse addition to the present building to contain freezer storage space and modern, quick-freezing facilities. William J. Lamping, general manager, announced. The addition will be used primarily for those requiring refrigerated storage and shipping facilities on one floor.

MINNESOTA

Excelsior, Minn.—Kemps Ice Cream Co. installed a model No. 2212 Polar station with vendors for cake and bag ice at the Skelly Station here.

Minneapolis, Minn.—The Cedar Sanitary Ice Company recently installed a model No. 2010 Polar station with three vendors at 50th and France here and Models No. 2615 Polar stations at Excelsior, Mound and Chaska. The Excelsior and Mound installations are equipped to vend cake and bag ice.

TEXAS

Harlington, Tex—The Central Power & Light Co. installed a Polar Cooler and a model No. 150 Polar Cabinet here.

WASHINGTON

Cashmere, Wash.—A cold storage and packing unit to hold 600,000 boxes of apples, 100,000 boxes of winter pears and 1500 tons of Bartlett pears annually is being planned here. Basil Sutton, manager of the Cashmere Fruit Growers' union said the plant is expected to be in readiness for the 1950 fruit crop grown by the 90 members of the association.

OBITUARY

Francis Joseph Gilmore

THE death of Francis Joseph Gilmore, refrigeration engineer and manager of the Southwestern Ice and Cold Storage Co., Yuma, Ariz., occurred at his home February 8 following a long illness. He was 56 years old. Mr. Gilmore was born in Coscob, Conn. and came to Yuma 26 years ago. He was a member of the local Elks Lodge, the Yuma Volunteer Fire Department and the American Society of Refrigerating Engineers. Surviving are his widow, Mrs. Mabel Gilmore, a son James of Yuma, and two daughters Mrs. Frances Barmore of Yuma and Mrs. Mildred Phillips of Somerton.

Herman B. Hausheer

THE death of Herman B. Hausheer, manager of the Index Coupon and Supply Co., and the Service Printing Co., La Porte, Ind., occurred February 19 at the Holy Family Hospital, La Porte. Mr. Hausheer who was 60 years of age had been ill for a year. He became manager of the coupon and printing business about nine years ago and had been employed by the company for about 20 years. He was born in La Porte and lived in that city all of his life. He was a member of the Christian Church, the Masonic Lodge and the Musicians Union. He was a member of the La Porte City Band for more than 40 years and during that time had toured the country as a cornetist in various bands.

Edward L. Fitzgerald

THE death of Edward L. Fitzgerald, secretary of the Hygeia Ice Co., 305 E. 80th St., New York City, from its formation in 1898 until his retirement two years ago, occurred in the Central Park West Nursing Home March 1. He was 80 years old. Mr. Fitzgerald started in the ice business in 1880 as a member of the Fitzgerald Bros. Ice Co. Sometime later the company merged with the American Ice Co. to form the Hygeia Co.

His widow, Mrs. Mary Mullin Fitzgerald, died last July. Surviving are two daughters, the Misses Mildred and Edythe Fitzgerald.

Mal A. Smith

THE death of Mal A. Smith, president of Mal Smith & Sons, ice manufacturers and distributors, Covington, Tenn., occurred February 21. He was 80 years old. In 1902 he opened an ice business in Covington which he continued to operate until the time of his death. Plants were located at Covington, Brownsville, Crosstown and Bolton. Mr. Smith was vice-president of the Tipton County Farmers Union Bank. He is survived by his widow, four sons and one daughter.

Walter Dobbins

THE death of Walter Dobbins, Greenville, S. C., president of the Textile Ice & Fuel Company occurred at his home March 13. Mr. Dobbins, who was 67 years old, had been ill about a year. He was born in Anderson, S. C. and moved to Greenville in 1924. He was a past president of the South Carolina Ice Manufacturers' Association, and for many years was active in the affairs of that organization.

INCREASE YOUR PROFIT

WITH REVOLUTIONARY NEW AUTOMATIC

LOADER SHAKER SIZER

This new Bateman unit, incorporating revolutionary design that eliminates vibration on frame of shaker, assures added years of service and economy. One man can keep unit in operation, bagging and loading magazine.

Three sizer screens, running on roller bearing in counter-balancing action, operate without vibration. Screen openings, 1½", ¾" and ⅜". Shaker motor ½ H.P. Processes 175 lbs. of ice per minute. Slow revolving drum, 12 large teeth, hold snow to absolute minimum. Removable plate on side of crusher so teeth can be changed easily and quickly. Five grate adjustments to help size ice before it reaches sizing screen.

LOW PRICE: Complete with motors, switches and galvanizing. F.O.B. Mineral Wells, Texas **$1,295**

GALVANIZED AT NO EXTRA COST BY DUPONT BRIGHT ZINC ELECTRO PROCESS

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BATEMAN FOUNDRY & MACHINE CO., INC.
MINERAL WELLS, TEXAS

REX

REX REFRIGERATION EQUIPMENT PROTECTS YOU AGAINST HIGH POWER COST

CAUSES

Causes of High Power Costs in Refrigeration Plants.

NON-CONDENSABLE AND FOUL GASES.
Cause excess head pressure and reduced capacities.

WATER AND OIL IN THE SYSTEM.
Lowers capacity by raising the boiling point of liquid refrigerant.

DIRTY CONDENSERS.
Scale raises condensing pressure and lowers capacity.

SUPER-HEATED REFRIGERANT DISCHARGE GAS.
Keeps discharge pressure high—increases power consumption.

SOLUTIONS

Solutions—Cut High Power Cost with this Rex Equipment.

REX AIR PURGER.
Removes all non-condensable gases. Holds down head pressure.

REX EXTRACTOR.
Removes compressor oil and water vapors in the discharge line.

REX TUBE CLEANING EQUIPMENT.
Electrically driven. Cuts cleaning time to ¼ of hand scraping.

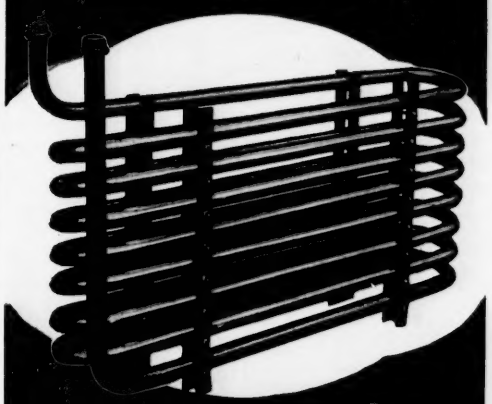
REX SUPER-HEAT EXTRACTOR.
Removes super-heat, lowering discharge pressure.

IF YOU ARE INTERESTED IN LOWERING YOUR POWER COSTS AS MUCH AS 20%—WRITE . . .

REX ENGINEERING & SALES CO.
Oklahoma City, Oklahoma
BOX 5161

Coils

Smooth Bends
Perfect Welds
Exact Measurements



For over sixty years, the National Pipe Bending Coils have proved their quality in Ice and Refrigeration plants.

NEW AND IMPROVED EQUIPMENT

MACHINERY-APPLIANCES-PROCESSES

Information contained in this department is furnished by the manufacturer of the article described and is not to be construed as the opinion of the Editor.

Patent Awarded on Regulating Valve

A PATENT covering a reversible regulating valve for year-around air conditioning systems has recently been awarded to R. U. Berry of the Air Conditioning Department, General Electric Company, Bloomfield, N. J. The patent is the fourth to be awarded to Berry.

R. V. Berry

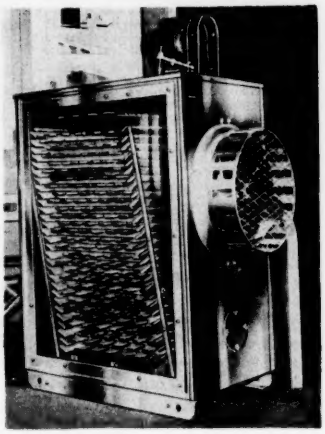
The valve system is designed for air conditioning installations which are equipped with full automatic year-around control where the changeover from heating to cooling, and vice versa, will be accomplished by reversing the direction of flow. Highly flexible, the system permits occupants to adjust the thermostats for any temperature desired, either heating or cooling, without limitation by a fixed differential between heating and cooling.

Berry has been with General Electric since 1927, and since 1930 has held various positions in the Air Conditioning Department, including design, commercial and field engineering assignments. He is currently manager of the consulting engineer and architect relations section of the department. He graduated from Amherst in 1925 and in 1927 was awarded a B.S. degree in electrical engineering by M.I.T. He is a member of the A.S.H.V.E., the A.S.R.E., and A.I.E.E.

New Aquatower Improvements

THE Marley Company, Inc., manufacturers of water cooling towers, nozzles, and DriCoolers, announces that the new 1950 Aquatower line will have an additional size plus improvements on all models. A 20-ton Aqua-tower will be available to meet the increasing demand for this size unit. Interiors of all towers will be lined with a thick coating of rubber to make the interior of the tower im-

(Continued on page 74)



Showing cut-a-way Aquatower exhibited at Southwest Air Conditioning Exposition, Dallas, Texas.

Sales and Reorganizations

Blytheville, Ark.—The Arkansas-Missouri Power Co. with headquarters here has sold five ice plants and storages for $125,000. The plant at Osceola was sold to C. W. Watson, ice dealer there. The Leachville and Monette plants were purchased by Hubert Reid, former manager of the Osceola plant, and Dr. George Cone of Osceola. Plants at Piedmond and Poplar Bluff, Mo., were sold to Fred B. Hanks. Plants at Blytheville, Walnut Ridge, Caruthersville, Mo. and Kennett Mo., were retained by the company.

Butler, Ga.—J. Lawson Wilson assumed ownership and management recently of the Butler ice plant which was purchased by him from G. C. Davis. Important improvement in the property is being made.

Hattiesburg, Miss.—The Hub Ice Co. has been sold to the Southeastern Ice Corp. of Birmingham, it was announced by R. A. Wilson, general manager of the Southeastern. A. D. Knight, who has managed the Hub Ice Co. for the past ten years, will continue as manager.

Silver City, N. M.—The Community Public Service Co., light and power utility serving this city and the Grant county mining district, has sold its ice manufacturing plant to Fred H. Miller of Amarilla and Paul D. Hosman of Laguna Beach, Calif. J. E. Seal of Silver City will be the manager.

Galveston, Tex.—The water plant and distribution system of the Dickinson Ice & Fuel Co. has been purchased by the Galveston County Water Control and Improvement District No. 1. The purchase price was $122,000, according to a deed filed in county clerk's office here.

Icy Items

Wichita, Kans.—A 5 percent dividend was declared recently by the Independent Ice and Locker Co., 215 West Central. This was in addition to a 10 percent dividend announced for the last quarter of 1949.

El Paso, Tex.—The name of Globe Mills, Inc., was changed to Globe Ice Co., at a directors' meeting recently. The change was made because the company's sole business is the manufacture and sale of ice for railroad car refrigeration. It formerly included the cotton mill and the flour and feed mill. The concern was founded in 1908. A 10-year renewal of the railroad icing contract with the Pacific Fruit Express Co. and the Southern Pacific Railroad has recently been approved.

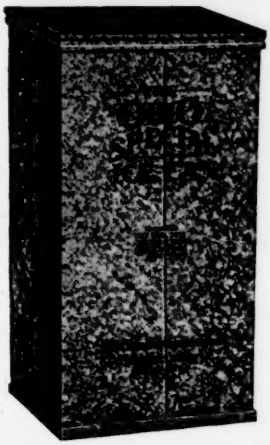
Fires and Accidents

St. Louis, Mo.—Damage to the extent of about $3,000 was caused by the explosion of a 15-ton ammonia compressor followed by a fire at the City Products Corp. ice plant on San Francisco Ave. The room and surrounding area was filled with ammonia gas when the force of the explosion in the engine room broke glass in nearby windows in the plant. The fire was confined to a portion of the boiler room.

New Incorporation

Osceola, Ark.—Articles of incorporation were filed with the office of the Secretary of State at Little Rock, March 6, 1950, by the Osceola Ice & Storage Co. Incorporators: T. A. Steed, Wirt Steed and Dave S. Laney.

OHIO SPECIAL ICE CANS



Double Riveted
Welded
Integral Tube Cans
Arctic Pownall Cans
Can Baskets
Condenser Trough

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Industrial Trucks
and Trailers

THE OHIO GALVANIZING & MFG. CO.

NILES « « Established 1902 » » OHIO

THE INDEX LINE
ICE DEALERS SUPPLIES

Only the Highest Quality Merchandise and efficient service necessary for the proper and profitable operation of your business. Write for our 1950 catalog.

INDEX COUPON AND SUPPLY COMPANY
LA PORTE, INDIANA

CEMCO

Double Gig Ice Hoist
Fast - Sturdy -
Dependable -

Send for details

THE CAPITAL ELEVATOR & MFG. CO.
424 W. Town St.
Columbus 8, Ohio

DIMCO CAST ALUMINUM FIN EVAPORATING COIL

★ *Saves Space*
★ *Saves Weight*
★ *Saves Cost*

CAN BE USED WITH ANY REFRIGERANT
SALES AGENCIES SOLICITED
Manufactured by
DETROIT ICE MACHINE COMPANY
2615 Twelfth St., Detroit 16, Mich.

Freezer Storage—70 Ft. x 90 Ft. x 11 Ft. High
One of 4 floors similarly equipped with DIMCO coils.
The Terminal Cold Storage & Ice Co., Dayton, Ohio

(Continued from page 72)

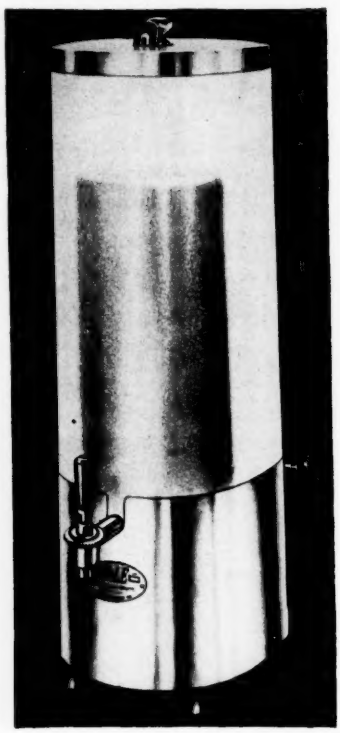
pervious to corrosion. A new quiet, deep pitch fan is used which operates at one half the usual speed. The rubber lining plus the slow speed fan gives unusually quiet operation.

Aquatowers are a packaged product, completely assembled, ready to go. They are sized from 3 to 50 tons. Aquatowers still have the open distribution basin, redwood filling from top to bottom, totally enclosed motors and complete basin fixtures. They are carried in stock in many principal cities or are available for immediate shipment from any of the four Marley Factories. Request Bulletin AQ-50.

Iced Juice Dispenser

A NEW iced juice dispenser particularly applicable to the restaurant trade is now being produced by the Ihle Manufacturing Co. Ice manufacturers who merchandise ice using appliances will find this dispenser provides an additional market for sized ice, and dispenses liquids at the proper temperature without involving the cost of expensive mechanical refrigerating equipment.

The dispenser has eye appeal, being made of stainless steel, and the transparent frosted plastic makes for perfect visibility of the juice, and gives the dispenser the "tall cool" look. It is light in weight and requires a minimum of counter space. It measures 8 inches in width and weighs about 20 pounds. It is easy to clean, to refill and to move around. Capacity of the dispenser is about 2 gallons. Juices are agitated by the use of a small motor.



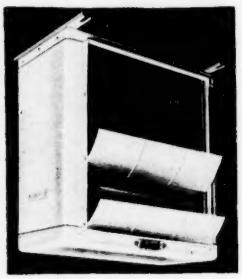
New Ihle Iced Juice dispenser

Valve-Sizing Charts

LIQUID and gas valve-sizing charts, covering the ranges of 0.02 to 10,000 gallons per minute and 1 to 100,000 pounds per hour respectively, have been published by Fischer and Porter Company. The liquid valve-sizing chart takes into account the difference between pressure drop across the valve and across the valve ports alone, liquid viscosity and specific gravity in determining port area and valve size. The gas valve-sizing chart takes into account inlet and outlet absolute pressures, gas specific gravity and temperature. Copies can be obtained from Fischer & Porter Co., Dept. 7007, Hatboro, Pa.

Kramer Trenton Announces New Unit Coolers

THE development of a new line of unit coolers known as the Kay-Tee Unit has been announced by the Kramer Trenton Co. These units cover seven sizes, which will balance a range of compressors from ¼ to 2 hp. These coolers, it is claimed, offer more economical operation, resulting from a newly patented Kramer fin and tube construction (Patent No. 2,462,511). The new surface has efficient heat transfer characteristic. The tubes are closely spaced with a small fin overhang. This results in a low fin to tube ratio and a high heat transfer factor. The tubing of each row is made of one continuous length with no joints. The tubing is bent to its proper shape and inserted into the fins through a slot. The return bends of one end are flattened to facilitate this operation. The tubing is then expanded under 3000 lbs. hydraulic pressure to fix a perfect thermal bond between fin and tube and at the same time the flattened return bends are reexpanded to normal size.

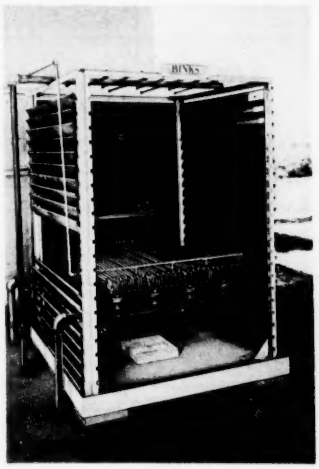


One of the new Kay-Tee units made by Kramer-Trenton Co.

A new method of multicircuiting is used which insures full capacity of the coil. Since the coils are designed for normal pressure drop, standard expansion valves can be used. It is not necessary to use expansion valves with external equalizers. The Kay-Tee Units are not supplied with expansion valves. All the units have a built-in heat exchanger. Provisions are made for easy mounting of the expansion valve bulb at the proper location by extending a loop of the suction line outside of the unit. The loop is located between the coil and the heat exchanger, which is the recommended position for the feeler bulb.

Bulletin Describes Heat Exchange Coils

THE publication of Bulletin 41, "Binks Type 'D' Evaporative Heat Exchange Coils" has been announced by the Binks Mfg. Co. These coils are utilized singly or in multiples to provide a "closed-type" cooling system for numerous commercial applications, handling a variety of liquids. They are popular for cooling Diesel and gasoline engine jacket water and similar applications.



The louvers in this standard Binks natural draft cooling tower have been removed to show the placement of the Type "D" heat exchange coils in relation to the spray distributing system at the top.

The liquid to be cooled is circulated through the heat exchanger in a closed circuit. The heat exchange coils are cooled by the showering action of raw water sprayed over the tube surfaces. The tubes in Binks coils are staggered for maximum surface exposure.

NOZZLES • DROP TUBES • CAN DOGS • CAN FILLERS • BLOWERS • BRACKETS • BAGS • HOISTS

• ICE CRUSHERS •

GET THE BEST FOR YOUR MONEY

Use our precision-machined air agitation equipment and you will make the very best possible clear raw water ice.

For 15 years we have been serving the ice industry. Our dependable equipment gives satisfactory performance and keeps down operating costs. Conservative prices.

If you don't know us yet, investigate our facilities. If you already know us, send your order now for prompt shipment.

An invitation

Write Wire Phone

ICE PLANT EQUIPMENT CO., Inc.

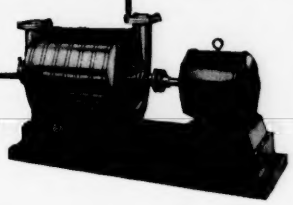
2543 Frankford Ave. Philadelphia 25, Pa.

• RUBBER TUBING •

TUBE CLEANERS • PUMPS • FILTERS • VALVES • ICE TONGS • THERMOMETERS • ICE PICKS

BLOWERS and EXHAUSTERS for Air and Gas

MULTI-STAGE BILLMYRE TYPE BLOWER



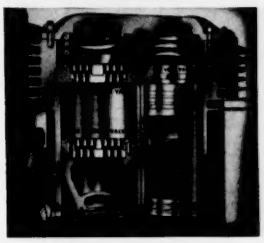
Centrifugal type
Single and multi-stage
½ lb. to 7 lbs. pressure
½ hp. to 250 hp.

Since back in the '90's, these trustworthy Blowers and Exhausters have been faithfully serving American industry—for agitation and aeration—for combustion—for cooling and ventilating—for gas and acid production—for conveying—and numerous other applications having various pressure and vacuum requirements.

If you have a problem in handling air or gases of various densities, temperatures or chemical compositions, write today for latest bulletin, B-5, on Lamson Blowers and Exhausters.

LAMSON Corp. BLOWER DIVISION
512 Lamson St. Syracuse, N. Y.

NO OTHER COMPRESSOR VALVE OFFERS YOU ALL OF THESE ADVANTAGES



- Lower power costs.
- Increased capacity.
- Elimination of enforced shutdowns due to faulty compressor valves.
- Safe and quiet operation of your compressor.
- Increased net profits.

VOSS VALVES are indispensable for use where loads are heaviest — where safety and reliability are paramount. They run smoothly — with less power — at higher speeds — without overheating. You can replace your present valves with VOSS VALVES without any change in your compressor.

For Better Performance

We will be glad to submit estimates, if you will send us the name, bore, stroke and speed of your air, gas, or ammonia compressors of any type or size.

VOSS LONG LIFE COMPRESSOR VALVES

J. H. H. VOSS CO., Inc. 785 East 144th Street NEW YORK 54, N. Y.

PITTSBURGH *Air Pressure Tested* **COILS**

Electrically welded, continuous; Air-Pressure-Tested while submerged in water. Built to your specifications. Send for new Coil Data Book and let us quote.

Welded Headers—Welded Ammonia Receivers
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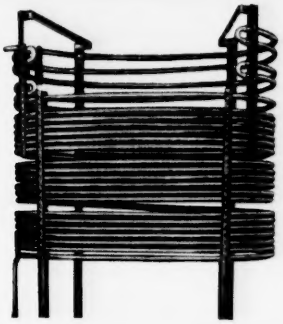
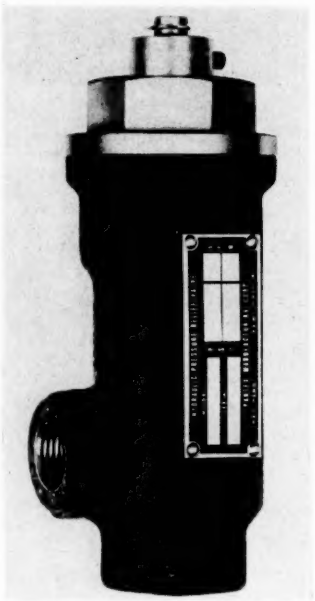


Type "D" coils are available by themselves or complete with a Binks natural or mechanical draft tower. Bulletin 41 gives complete data including dimensions, total effective surface, and weights for 17 coil sizes. Drawings and photographs illustrate the construction and use of the Type "D" coils. Copies of the Bulletin are available upon request from the Binks Manufacturing Co., 3122 Carroll Ave., Chicago 12, Ill.

New Precision Hydraulic Relief Valve

A NEW cartridge type of hydraulic relief valve has been announced by the Hydraulics Division of Pantex Manufacturing Corp., Pawtucket, R. I. This valve, which meets or exceeds government standards as set up by specification AN-V-lb for army and navy aeronautical use, also offers many new design possibilities for industry where precision hydraulic controls are required.



The Pantex High-Precision, Cartridge Hydraulic Relief Valve — HPLV-D1. This is the industrial type valve ported for 3/8 in. pipe thread.

Available for pressure settings ranging from 100 to 5,000 lbs. per sq. in., the new valve opens and closes within a 7 percent differential. Even smaller operating differentials can be had for special applications if required. Constant repeat accuracy is assured by the unique "in balance" design of the valve. Full load shocks and surges do not disturb the valve's "in balance" operation.

The Pantex Precision Relief Valve is silent and entirely free from squeal and chatter. The unusual design eliminates wire draw and provides high volume flow at all pressures. This frequently permits the use of a smaller unit, thus conserving weight, space and costs.

Data sheets, together with descriptive literature, sizes and specifications are available without obligation on direct request. Inquiries should be made to the attention of the Hydraulics Division, Pantex Manufacturing Corp., Pawtucket, R.I.

MANUFACTURERS' NEWS

Baker Reorganizes Sales Office

BAKER Refrigeration Corporation, South Windham, Me., is discontinuing contracting operations in Omaha and St. Louis in accordance with new sales policies and distributors are being appointed to handle all Baker sales, service and contracting work in these areas. The Central Ice Machine Co., will be the Omaha distributor and the St. Louis distributorship plans will be announced soon.

Present Baker contracting branches on the West Coast located in Seattle, Portland, San Francisco and Los Angeles will not be changed due to the geographic location and the specific types of business served in these particular areas. The United States is now divided into four regions and will be in direct charge of the Regional Manager who will guide the activities of the District Managers in each region.

The Northeastern Region will include the South Windham, New York and Washington-Philadelphia Districts, W. W. Woodroof is manager of this region, and will also cover the South Windham District including Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Northern Connecticut and portions of New York state.

The New York District includes New York City, Long Island, Southern Connecticut and Northern New Jersey. H. H. Paltridge is District Manager and with his staff, will cover this area from Baker's New York headquarters at 103 Park Avenue, New York City.

The Washington-Philadelphia District includes Southern New Jersey, Pennsylvania, Maryland, Delaware, District of Columbia, Virginia and Eastern West Virginia. E. J. Uhthoff becomes manager of this District and offices will be maintained at 1728 "L" St., N. W., Washington, D. C.

Baker's Southern Region includes the Atlanta and Dallas Districts. D. P. Mandery now becomes manager of this region. Mandery will still continue to actively cover the Dallas District including Louisiana, Texas, Oklahoma and New Mexico. Atlanta District will be managed by B. W. Embry from offices at 955 Deckner Ave. S. W., Atlanta. This district covers North and South Carolina, Georgia, Florida, Alabama and Mississippi.

The Central Region will have headquarters in St. Louis. This region includes the Chicago, Cleveland, St. Louis and Omaha districts. John L. Bodine is manager and will also cover the Chicago district which includes Northern Illinois, Wisconsin, Western Michigan and Northern Indiana. A new Cleveland district has been set up and will cover Ohio, Eastern Michigan, Western West Virginia and portions of Kentucky.

Harry Materne, formerly Baker sales representative in the St. Louis area is promoted to district manager and will center his activities in that area covering Eastern Missouri, Southern Illinois, Western Kentucky, Tennessee, Arkansas and Southern Indiana.

The Omaha District will cover areas of Nebraska, Iowa, Minnesota, North and South Dakota, Kansas, Western Missouri, Colorado and Wyoming. Lorimer Dunlevy who has been branch manager at Baker's Omaha contractin goperation is promoted to district manager of that area.

The Baker Pacific Region will remain unchanged. Charles Hollingsworth is manager of Los Angeles district; Ross Rathbun is manager of San Francisco district and Vince Kauffman is manager of the Seattle district.

Midwest Warehouse

To facilitate deliveries of Baker's products, a St. Louis Warehouse is being set up and will serve all midwestern distributors. It is planned to stock for immediate delivery, Baker compressors, packaged air conditioning units and other air conditioning and refrigeration equipment manufactured by Baker in its South Windham Plant.

Due to expanded sales efforts and influx of orders on packaged air conditioners and Baker's smaller type Freon and ammonia compressors, Baker will continue to manufacture ammonia compressors in Omaha. A new Baker Parts Depot is to be set up immediately in Omaha at 5014 South 24th St. Here a large assortment of parts for the present and former models of both Freon and ammonia compressors will be maintained. Charles Knox will have general supervision of the Omaha manufacturing operations and the Omaha parts depot.

Harry Cooling Towers Opens New York Office

HARRY COOLING TOWERS, Inc., manufacturers of water cooling equipment, with headquarters in Doylestown, Pa., has opened a New York office at 125 Cedar Street for sales, engineering and service operations.

The New York office of the 50-year-old firm will be headed by Morton H. Staub, whose appointment as vice president in charge of sales, effective immediately, was also announced by J. Barton Harry, president of the company.

"It is, of course, more than a coincidence that the Harry Company has decided to open an office in New York at a time when the city's water problems are more serious than at any time in history," Mr. Staub said.

Pointing out that industry consumes about 27 per cent of the city's water supply, Mr. Staub declared that many millions of gallons per day could be saved through the installation of efficient water cooling equipment.

Creamery Package Elects Lehrack Exec. Vice-Pres.

E. B. LEHRACK was elected executive vice-president of The Creamery Package Mfg. Company, at a Directors' meeting March 1, according to an announcement from G. E. Wallis, president of the Company.

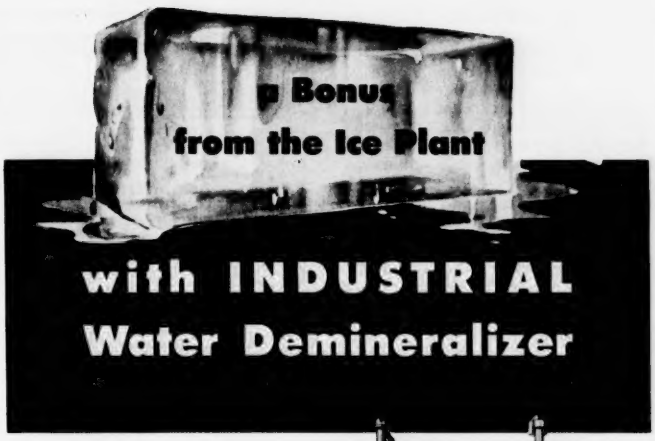
Mr. Lehrack started with Creamery Package in 1919 as a salesman for the firm's Kansas City branch. In 1926 he organized his own business, the Lehrack Ice Cream Co. of Wichita Falls, Texas; he later consolidated Lehrack-Ferguson Dairy Products Co., and in 1929 sold to Carnation Company, becoming Supervisor of Carnation's fresh milk and ice cream division operations in Texas, Oklahoma, Missouri and Iowa. In 1935, he returned to The Creamery Package Mfg. Company, Chicago.

York Corporation Appoints Distributors

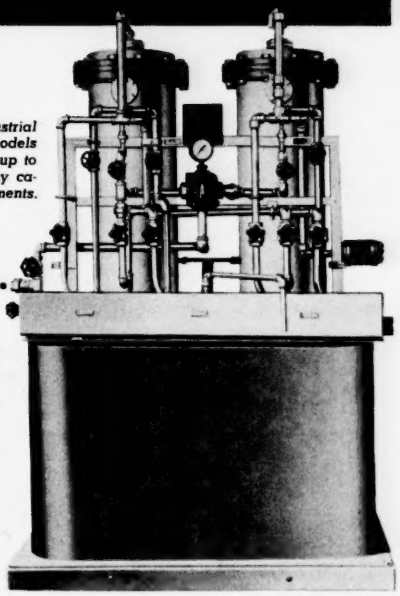
THE appointment of four new distributors has been announced by York Corporation, manufacturers of air conditioning and refrigeration equipment, according to John R. Hertzler, vice-president and general sales manager.

They are: The Calcasieu Lumber Co., 201 W. 2nd St., Austin, Tex.; the Clayton C. Smith Co., 702 Mulberry St., Williamsport, Pa.; the Hawes Electric Co., 333 Washington Ave., Huntington, W. Va.; and the Modernized Equipment Co., 922 Race St., Cincinnati, O.

In announcing the new appointments, Mr. Hertzler said that "although York's completed sales during 1949 exceeded $50,000,000, the largest in the industry, we are look-



A typical two-bed Industrial Water Demineralizer. Standard models available with capacities up to 1000 gph. Special units of any capacity engineered to requirements.



Here's how it works...

Instead of running ordinary city water into the freezing tanks, it is passed through the Industrial demineralizer where beds of ion-exchange resins remove the dissolved mineral salts—delivering the chemical equivalent of pure water.

With this pure water there are no minerals to deposit in the core—so the whole core-pulling operation is eliminated. Furthermore, the amount of ice which cracks in the cans is appreciably reduced. And the transparency of the whole cake is improved—your customers will notice the difference and like it.

It's easy to find out how to get this big bonus from your ice plant. Send us an analysis of the water you are using, the quantity you need, and at what rate (gallons per hour). We will send you complete information on demineralized water, estimate of costs, performance data, etc. Better look into it right away.

FILTERS Pressure Type · PUMPS Centrifugal · CORROSICS TESTING APPARATUS Salt Fog • Humidity

INDUSTRIAL FILTER & PUMP MFG. CO.

1635 West Carroll Avenue
Chicago 12, Illinois

RUBBER DIVISION Vulcanized Linings • Molded Products · WATER DEMINERALIZERS

ing forward to a substantial growth of our dealer organization in 1950. For the first time in history a complete line of hermetically sealed equipment is available, which, because of ease of installation and application, broadens the market considerably beyond the commercial uses in which air conditioning has met with greatest public acceptance."

Stanton Cited By General Electric

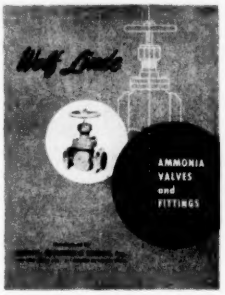
THE late Myles J. Stanton of the Air Conditioning Department, General Electric Company, Bloomfield, N. J., is listed among the 47 winners of the Charles A. Coffin Award for work of outstanding merit during 1949, the company's highest honor to employees. The award, recently presented to his wife, Mrs. Florence Payne Stanton, at ceremonies in Bloomfield, consists of an honorarium, medal, and certificate.

The achievement for which the citation was made is the development of a method in the manufacture of heat transfer surface for bonding aluminum fins to copper tubing resulting in an improved design and lower production costs. The project is the most outstanding of several for which Stanton had been responsible.

CATALOGS AND BULLETINS

New Catalog of Valves and Fittings

A NEW catalog of Ammonia Valves and Fittings has been published by Dersch, Gesswein and Neuert, Inc., 4849 West Grand Ave., Chicago 39.



This well detailed and illustrated catalog gives a complete and understandable presentation of the Wolfe-Linde line of valves and fittings. Each type and style is shown on a separate page with a dimension diagram and table as well as weights and other data. Thus the catalog is easy to use.

The Wolfe-Linde line was established in 1880 and the current catalog of Ammonia Valves and Fittings is the 15th of the series. Copies of it are available on request to the address given above.

Manual Describes Rubatex Insulation

A 20-PAGE book on the use of Rubatex R-103-S Insulation Hardboard for low temperature insulation purposes has been released by Rubatex Division of Great American Industries, Inc., Bedford, Virginia. This is a technical manual, containing information for use by design and construction engineers in applying the product in buildings and in manufactured products.

Rubatex Insulation Hardboard is an expanded-rubber compound, made of synthetic stocks. Its structure is a myriad of tiny cells containing inert nitrogen. Manufacturers state that this material will not absorb moisture and may be used without an added vapor barrier.

New Bulletins on Refrigerating Equipment

BULLETINS on refrigerating, air conditioning and ice making equipment have been issued by the Frick Co., Waynesboro, Pa. In a four-page general bulletin, various installations are illustrated. An eight page bulletin covers descriptions and illustrations of evaporative condensers and another one of four pages covers the Frick one-man ice-making system.

MARTOCELLO ICE PICKS

"Cost You Less To Buy The Best"

Immediate Delivery on Plain Handle Ice Picks

BLADES

of High Carbon Tool Steel, accurately tempered to give you maximum use.

HANDLES

of Sound, Clear Hard Wood with Protective Flexible Lacquer Coating.

FERRULES

of Pressed Steel securely registered on Handle and Plated to Resist Corrosion.

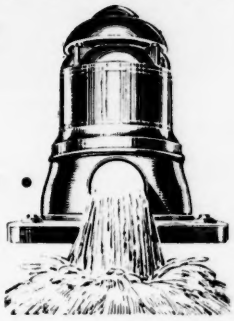
PRICES ON PLAIN AND PRINTED HANDLES HAVE BEEN REDUCED! WRITE TODAY FOR NEW PRICES.

Jos. A. Martocello & Co. 229-231 NORTH 13th STREET PHILADELPHIA 7, PA.

"Serving the Ice Industry Since 1916" *"There is no Substitute for* MARTOCELLO QUALITY"

LOWER COST OPERATION

Longer Life



Layne well water systems are designed and built to produce much greater volumes of water than can be obtained from the conventional type of installation. Skillful designing and precision manufacture of the Layne Vertical Turbine pump used in these systems give extra high efficiency. The results are: more water—less cost and longer life for the unit. Furthermore, Layne well water systems are so ruggedly built that upkeep cost is almost nothing.

Thousands are now serving cities and industries throughout the world.

For further information on Layne Well Water Systems—or Layne Vertical Turbine Pumps, catalogs, etc., address

LAYNE & BOWLER, INC.
General Offices
Memphis 8, Tenn.

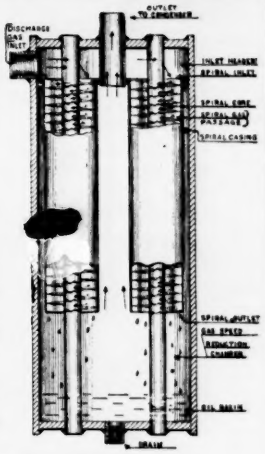
LAYNE

WELL WATER SYSTEMS

"King Zeero"

OIL SEPARATOR

STOPS OIL FROM ENTERING CONDENSER RECEIVER AND LOW SIDE



Allows operation as was originally intended. Simple in operation — no parts to wear out — no screens, metal wool or any close screens to clog, raise discharge pressures and cut down capacity.

When used in connection with air compressors, water is also separated with the oil.

Built for years of trouble free service.
Mechanical details on request.

THE KING ZEERO COMPANY
1447-55 Montrose Ave., Chicago 13, Ill.

A Vest Pocket Library
For the Engineer
REFRIGERATION MEMORANDA
(12th edition)
By JOHN LEVEY
A handy book containing a surprising amount of useful data required in everyday practice.
FLEXIBLE LEATHER—ONE DOLLAR
Nickerson & Collins Co., Publishers, 435 Waller Ave., Chicago

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Consulting Engineers
112-114 WEST 42nd ST. NEW YORK CITY 18
Ice Making and Refrigeration - Industrial Power Plants
Reports, Appraisals and Management

VAN RENSSELAER H. GREENE
ENGINEERS
COMPLETE PLANT DESIGNS INCLUDING
BUILDING AND EQUIPMENT
11 PARK PLACE **NEW YORK 7, N.Y.**

"MAKUBE" TRADE MARK

The Home-Ice-Cuber since 1932

$10.00 per doz. $8.00 per doz.

From your jobber or from us.

John W. Toyne
South Bend **R. R. 5, Box 205** **Indiana**

VIVIAN SERV-ICE TRADE MARK REG. U.S. PAT. OFF. Products
ICE TOOLS AND SUPPLIES

WE CONTINUE YEAR AFTER YEAR
to make the kind of Ice Picks that will give YOUR customers satisfaction and build up GOOD WILL FOR YOU.

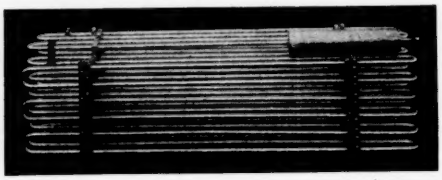
PRICE UPON REQUEST

VIVIAN MANUFACTURING CO. 4132-38 Folsom Ave., St. Louis 10, Mo.

QUALITY COILS FOR ALL APPLICATIONS

WELDED HEADERS, PIPE BENDS AND AMMONIA RECEIVERS

Whether your next job be for a single bend, or coil or complete piping system, Chicago Nipple can supply your requirements. Experienced workmen, practical engineers, and modern equipment reflect the quality of our products.



Coils are of selected ammonia pipe—all joints are electrically welded—checked under water with an air pressure of 300 pounds to guarantee tightness.

SEND DRAWING OR BLUE PRINT FOR QUOTATION

CHICAGO NIPPLE MFG. CO.

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B B BRAND

AMMONIA

Purity of product and immediate shipment are two good reasons for specifying Bower Brand. Please keep empty cylinder rotating.

Est. 1858

HENRY BOWER CHEMICAL MANUFACTURING COMPANY

29TH AND GRAY'S FERRY ROAD

PHILADELPHIA 46, PA.

THE BUYERS

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Vogt Machine Co., Henry, Louisville, Ky.

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Refrigeration Engineering Corp., Philadelphia, Pa.

AIR CIRCULATORS
Reynolds Electric Co., River Grove, Ill.

AIR COMPRESSORS
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Frick Co., Waynesboro, Pa.

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AMMONIA COMPRESSOR VALVES
Frick Co., Waynesboro, Pa.

AMMONIA COMPRESSORS
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BOILERS
Frick Co., Waynesboro, Pa.
Vogt Machine Co., Henry, Louisville, Ky.

BOILER TUBES
Byers Co., A. M., Pittsburgh, Pa

BOOKS—TECHNICAL
Nickerson & Collins Co., Chicago, Ill

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Refrigeration Engineering Corp., Philadelphia, Pa.
Reynolds Mfg. Co., Springfield, Mo.
Roots-Connersville Blower Corp., Connersville, Ind.
Vogt Machine Co., Henry, Louisville, Ky.
York Corp., York, Pa.

BRINE COOLERS
Acme Industries, Inc., Jackson, Mich.
Baker Refrigeration Corp. So. Windham, Maine
Dersch, Gesswein & Neuert, Inc. Chicago, Ill.
Frick Co., Waynesboro, Pa.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.
Refrigeration Engineering Corp., Philadelphia, Pa.
Reynolds Mfg. Co., Springfield, Mo.
Vilter Mfg. Co., Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.
York Corp., York, Pa.

BRINE SPRAY COOLING
Acme Industries, Inc., Jackson, Mich.
Frick Co., Waynesboro, Pa.
Martocello & Co., Jos. A., Philadelphia, Pa.

BRINE TREATMENT
Chemical Solvent Co., Birmingham, Ala.

CALCIUM CHLORIDE
Salvay Sales Div., Allied Chemical & Dye Corp., New York, N. Y.

CAN DUMPS
Frick Co., Waynesboro, Pa.
Gifford-Wood Co., Hudson, N. Y.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.
Martocello & Co., Jos. A., Philadelphia, Pa.
Ohio Galvanizing & Mfg. Co., Niles, Ohio
Refrigeration Engineering Corp., Philadelphia, Pa.
Reynolds Mfg. Co., Springfield, Mo.
Vogt Machine Co., Henry, Louisville, Ky.
York Corp., York, Pa.

CAR ICING EQUIPMENT
Capital Elevator & Mfg. Co., Columbus, Ohio
Gifford-Wood Co., Hudson, N. Y.
The Lilly Co., Memphis, Tenn.

COILS
Acme Industries, Inc., Jackson, Mich.
Byers Co., A. M., Pittsburgh, Pa.
Chicago Nipple Mfg. Co. Chicago, Ill.
Creamery Package Mfg. Co., Chicago, Ill.
Detroit Ice Machine Co., Detroit, Mich.
Howe Ice Machine Co., Chicago, Ill.
National Pipe Bending Co., New Haven, Conn.
Philadelphia Pipe Bending Co., Philadelphia, Pa.
Pittsburg Pipe Coil & Bending Co., Pittsburg, Pa.

COLD STORAGE CONSTRUCTION
Armstrong Cork Co., Lancaster, Pa.
Frick Co., Waynesboro, Pa.
Mundet Cork Corp., Brooklyn, N. Y.
Refrigeration Engineering Corp., Philadelphia, Pa.
Vogt Machine Co., Henry, Louisville, Ky.

COLD STORAGE DOORS
Butcher Boy Cold Storege Door Co., Chicago, Ill.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Jamison Cold Stge. Door Co., Hagerstown, Md.
Refrigeration Engineer Co., Minneapolis, Minn.

COMPRESSOR VALVE PLATES & DISCS
Voss, Inc., J. H. H., New York, N. Y.

COMPRESSOR VALVES
Voss, Inc., J. H. H., New York, N. Y.

COMPRESSORS
(See Ice Making and refrigerating Machinery)
(See Air Compressors)

CONDENSERS
Acme Industries, Inc., Jackson, Mich.
Baker Refrigeration Corp. So. Windham, Maine
Creamery Package Mfg. Co., Chicago, Ill.
Dersch, Gesswein & Neuert, Inc. Chicago, Ill.
Frick Co., Waynesboro, Pa.
Howe Ice Machine Co., Chicago, Ill.
Kehoe Machinery Co., Inc. R. P., Ridgefield Park, N. J.
King-Zeero Co., Chicago, Ill.
National Pipe Bending Co., New Haven, Conn.
Philadelphia Pipe Bending Co., Philadelphia, Pa.
Pittsburgh Pipe Coil & Bending Co., Pittsburgh, Pa.
Reynolds Mfg. Co., Springfield, Mo.
Vilter Mfg. Co., Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.

CONSULTING ENGINEERS
Greene, Van R. H., New York, N. Y.
Ophuls & Associates, Fred, New York, N. Y.

CONVEYORS
Capital Elevator & Mfg. Co., Columbus, Ohio
Gifford-Wood Co., Hudson, N. Y.

COOLING TOWERS
Binks Mfg. Co., Chicago, Ill.
Frick Co., Waynesboro, Pa.
Vilter Mfg. Co., Milwaukee, Wis.

CORK INSULATION
Armstrong Cork Co., Lancaster, Pa.
Mundet Cork Corp., Brooklyn, N.Y.

COUPON BOOKS
Index Coupon & Supply Co., La Porte, Ind.
United Ice & Oil Supply Co., Boston, Mass.
Vivian Mfg. Co., St. Louis, Mo.

COVERINGS (PIPE AND BOILERS)
Armstrong Cork Co., Lancaster, Pa.
Mundet Cork Corp., Brooklyn, N.Y.

CYLINDERS (GAS & LIQUID)
Byers Co., A. M., Pittsburgh, Pa.

DEIONIZING EQUIPMENT
Industrial Filter & Pump Mfg. Co. Inc., Chicago, Ill.

DEMINERALIZING EQUIPMENT
Industrial Filter & Pump Mfg. Co. Inc., Chicago, Ill.

DIESEL ENGINES
Caterpillar Tractor Co., Peoria, Ill.

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Frick Co., Waynesboro, Pa.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Knickerbocker Stamping Co., Parkersburg, W. Va.
Martocello & Co., Jos. A., Philadelphia, Pa.
Ohio Galvanizing & Mfg. Co., Niles, Ohio
Refrigeration Engineering Corp., Philadelphia, Pa.
Vogt Machine Co., Henry, Louisville, Ky.

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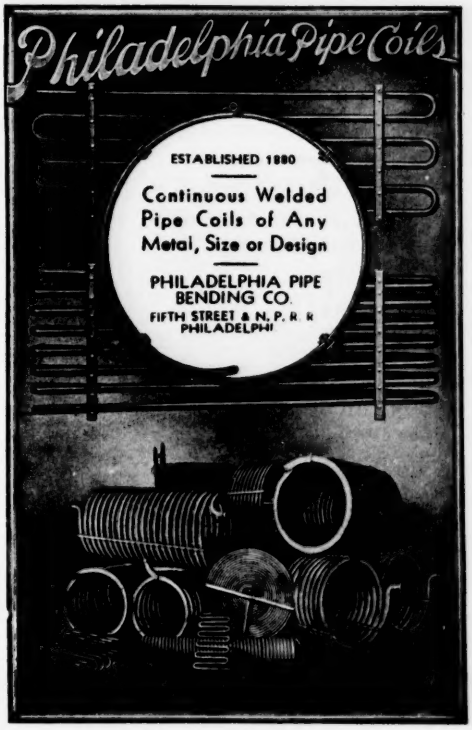
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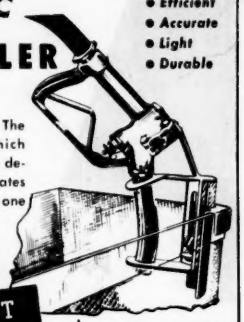

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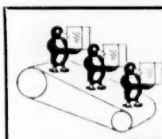

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are engineered for economical operation in the hottest climates. Rigid board-form insulation, 1½ H.P. compressor, double gasketed doors, and double doored delivery chutes combine to seal out hot air. Ventilated, peaked roof repels sun's rays.

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THE BUYERS

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DRIVES, TRANSMISSIONS
Frick Company, Waynesboro, Pa.
Link-Belt Co., Chicago, Ill.

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Gifford-Wood Co., Hudson, N. Y.
The Lilly Co., Memphis, Tenn.

ENGINEERS AND ARCHITECTS
(See Architects and Engineers)

ENGINES
Caterpillar Tractor Co., Peoria, Ill.
Frick Co., Waynesboro, Pa.

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Refrigeration Engineering, Inc., Los Angeles, Calif.

EVAPORATORS
Acme Industries, Inc., Jackson, Mich.
Creamery Package Mfg. Co., Chicago, Ill.
Frick Co., Waynesboro, Pa.
Niagara Blower Co., New York, N.Y.
Refrigeration Engineering, Inc., Los Angeles, Calif.
Vogt Machine Co., Henry, Louisville, Ky.
York Corp., York, Pa.

FEED-WATER HEATERS
National Pipe Bending Co., New Haven, Conn.
Vogt Machine Co., Henry, Louisville, Ky.

FIBERGLAS
Armstrong Cork Co., Lancaster, Pa.

FIELD ICE SAWS
Gifford-Wood Co., Hudson, N. Y.
United Ice & Oil Supply, Boston, Mass.

FILTERS, CLARIFYING
Industrial Filter & Pump Mfg. Co. Inc., Chicago, Ill.

FILTERS, WATER
Frick Co., Waynesboro, Pa.
Ice Plant Equipment Co., Inc. Philadelphia, Pa.
Industrial Filter & Pump Mfg. Co. Inc., Chicago, Ill.
Martocello & Co., Jos. A., Philadelphia, Pa.
York Corp., York, Pa.

FILTRATION EQUIPMENT
Industrial Filter & Pump Mfg. Co. Inc., Chicago, Ill.

FIN COILS
Acme Industries, Inc., Jackson, Mich.
Aircraft Production Engineers, Chicago, Ill.
Howe Ice Machine Co., Chicago, Ill.
Rempe Company, Chicago, Ill.
York Corp., York, Pa.

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Acme Protection Equipment Co., Chicago, Ill.

FITTINGS
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.

FOOD FREEZING EQUIPMENT
Baker Refrigeration Corp. So. Windham, Maine
Frick Co., Waynesboro, Pa.
Howe Ice Machine Co., Chicago, Ill
Vogt Machine Co., Henry, Louisville, Ky.

FROZEN FOOD LOCKERS
Knickerbocker Stamping Co., Parkersburg, W. Va.
Rempe Company, Chicago, Ill.

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National Pipe Bending Co., New Haven, Conn.

GAS AND OIL ENGINES
Caterpillar Tractor Co., Peoria, Ill.

HAND TRUCKS
Ohio Galvanizing & Mfg. Co., Niles, Ohio

HOISTING APPARATUS
Capital Elevator & Mfg. Co., Columbus, Ohio
Ice Plant Equipment Co., Inc. Philadelphia, Pa.
Reynolds Mfg. Co., Springfield, Mo

ICE BAGS
Union Bag & Paper Corp., New York, N. Y.

ICE BLOWERS
Gifford-Wood Co., Hudson, N. Y

ICE CAN FILLERS
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Ice Plant Equipment Co., Inc. Philadelphia, Pa.
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Vogt Machine Co., Henry, Louisville, Ky.

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Martocello & Co., Jos. A., Philadelphia, Pa.
Ohio Galvanizing & Mfg. Co., Niles, Ohio
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Capital Elevator & Mfg. Co., Columbus, Ohio
Gifford-Wood Co., Hudson, N. Y.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Index Coupon & Supply Co., La Porte, Ind.
Martocello & Co., Jos. A., Philadelphia, Pa.
Refrigeration Engineering Co., Minneapolis, Minn.
Refrigeration Engineering Corp., Philadelphia, Pa.
United Ice & Oil Supply, Boston, Mass.
Vivian Mfg. Co., St. Louis, Mo.

ICE CHUTES
Frick Co., Waynesboro, Pa.
Gifford-Wood Co., Hudson, N. Y.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Jamison Cold Storage Door Co., Hagerstown, Md.
Martocello & Co., Jos. A., Philadelphia, Pa.
Refrigeration Engineering Corp., Philadelphia, Pa.

ICE CONVEYORS
Capital Elevator & Mfg. Co., Columbus, Ohio
Gifford-Wood Co., Hudson, N. Y
The Lilly Co., Memphis, Tenn.
Refrigeration Engineering Co., Minneapolis, Minn.
United Ice & Oil Supply, Boston, Mass.

ICE CREAM PLANTS
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Vogt Machine Co., Henry, Louisville, Ky.

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The Lilly Co., Memphis, Tenn.
Martocello & Co., Jos. A., Philadelphia, Pa.
Micron, Inc., Bettendorf, Iowa
Refrigeration Engineering Corp., Philadelphia, Pa.
United Ice & Oil Supply Co., Boston, Mass.
Vivian Mfg. Co., St. Louis, Mo.

ICE CUBE CONTAINERS
Index Coupon & Supply Co., La Porte, Ind.
The Lilly Co., Memphis, Tenn.
Union Bag & Paper Co., New York, N. Y.
United Ice & Oil Supply Co., Boston, Mass.
Vivian Mfg. Co., St. Louis, Mo.

ICE CUBERS
Flynn and Emrich Co., Baltimore, Md.
Gifford-Wood Co., Hudson, N. Y.
Ice Plant Equipment Co., Inc. Philadelphia, Pa.
The Lilly Co., Memphis, Tenn.
Martocello & Co., Jos. A., Philadelphia, Pa.
Refrigeration Engineering Corp., Philadelphia, Pa.
Thermo Cuber Co., Inc., Chicago, Ill.
Toyne, John W., So. Bend, Ind.
United Ice & Oil Supply Co., Boston, Mass.
Vivian Mfg. Co., St. Louis, Mo.

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Flynn and Emrich Co., Baltimore, Md.
Gifford-Wood Co., Hudson, N. Y.
The Lilly Co., Memphis, Tenn.
Thermo Cuber Co., Inc., Chicago, Ill.
United Ice & Oil Supply Co., Boston, Mass.

ICE DELIVERY BAGS
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Gifford-Wood Co., Hudson, N. Y.
Index Coupon & Supply Co., La Porte, Ind.
The Lilly Co., Memphis, Tenn.
Martocello & Co., Jos. A., Philadelphia, Pa.
Pittsburgh Waterproof Co., Pittsburgh, Pa.
Union Bag & Paper Corp., New York, N. Y.
United Ice & Oil Supply Co., Boston, Mass.
Vivian Mfg. Co., St. Louis, Mo.

ICE ELEVATORS AND CONVEYORS
Capital Elevator & Mfg. Co., The, Columbus, Ohio
Gifford-Wood Co., Hudson, N. Y.

ICE HARVESTING MACHINERY & TOOLS
Gifford-Wood Co., Hudson, N. Y.
United Ice & Oil Supply Co., Boston, Mass.

ICE MAKING AND REFRIGERATING MACHINERY
Aircraft Production Engineers, Chicago, Ill.
Dersch, Gesswein & Neuert, Inc. Chicago, Ill.
Enterprise Equipment Corp., Yonkers, N. Y.
Detroit Ice Machine Co., Detroit, Mich.
Frick Company, Waynesboro, Pa.
Howe Ice Machine Co., Chicago, Ill.
Ice Plant Equipment Co., Inc. Phiadelphia, Pa.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.
Martocello & Co., Jos. A., Philadelphia, Pa.
Refrigeration Engineering Corp., Philadelphia, Pa.
Reynolds Mfg. Co., Springfield, Mo.
Vilter Mfg. Co., Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.

ICE PICKS AND PLANERS
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Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Index Coupon & Supply Co., La Porte, Ind.
The Lilly Co., Memphis, Tenn.
Martocello & Co., Jos. A., Philadelphia, Pa.
United Ice & Oil Supply Co., Boston, Mass.
Vivian Mfg. Co., St. Louis, Mo.

ICE PICK SCABBARDS
Gifford-Wood Co., Hudson, N. Y.
Ice Plant Equipment Co., Inc. Phiadelphia, Pa.
Index Coupon & Supply Co., La Porte, Ind.
Martocello & Co., Jos. A., Philadelphia, Pa.
United Ice & Oil Supply Co., Boston, Mass.
Vivian Mfg. Co., St. Louis, Mo.

ICE PICK VENDING MACHINES
United Ice & Oil Supply Co., Boston, Mass.

ICE PLANTS
Enterprise Equipment Corp., Yonkers, N. Y.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.
Refrigeration Engineering Corp. Philadelphia, Pa.

ICE SCALES
Gifford-Wood Co., Hudson, N. Y.
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Index Coupon & Supply Co., La Porte, Ind.
Martocello & Co., Jos. A., Philadelphia, Pa.
United Ice & Oil Supply Co., Boston, Mass.
Vivian Mfg. Co., St. Louis, Mo.

ICE TOOLS
Gifford-Wood Co., Hudson, N. Y.
Ice Plant Equipment Co., Inc. Phiadelphia, Pa.
Index Coupon & Supply Co., La Porte, Ind.
The Lilly Co., Memphis, Tenn.
Martocello & Co., Jos. A., Philadelphia, Pa.
United Ice & Oil Supply Co., Boston, Mass.
Vivian Mfg. Co., St. Louis, Mo.

ICE VENDORS
Dickinson & Co., F. B. Des Moines, Ia.
Frick Company, Waynesboro, Pa.
Ice Plant Equipment Co., Inc. Phiadelphia, Pa.
Jamison Cold Storage Door Co., Hagerstown, Md.
Refrigeration Engineering Co., Minneapolis, Minn.
S & S Vending Machine Co., San Jose, Calif.
Thermo Cuber Co., Inc., Chicago, Ill.
Towal Mfg. Co. Inc., Mount Vernon, Ill.
United Ice & Oil Supply Co., Boston, Mass.

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National Pipe Bending Co., New Haven, Conn.

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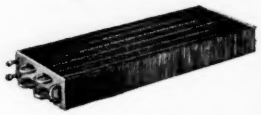

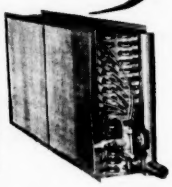

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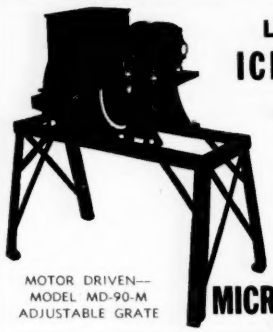

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- SAVE ICE

12 MODELS TO CHOOSE FROM

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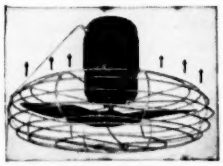

Cold is not enough to keep food products at their best.

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RECO Refrigerator Fans blow upward instead of horizontally. The air follows the ceiling line and down the walls and up to the fan again leaving no dead air pockets.

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THE BUYERS

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INSULATING MATERIALS
Armstrong Cork Co., Lancaster, Pa.
Mundet Cork Corp., Brooklyn, N. Y.
Pacific Lumber Co., San Francisco, Calif.

LOW TEMPERATURE EQUIPMENT
(See Ice Making and Refrigerating Machinery)

MASKS, AMMONIA
Acme Protection Equipment Co. Chicago, Illinois

MATERIALS HANDLING EQUIPMENT
Ohio Galvanizing & Mfg. Co., Niles, Ohio
The Moto-Truc Co., Cleveland, Ohio

OIL AND LUBRICANTS
Frick Company, Waynesboro, Pa.
Socony-Vacuum Oil Co., Inc., New York, N. Y.
Sun Oil Co., Philadelphia, Pa.
Texas Co., The, New York, N. Y.

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Socony-Vacuum Oil Co., Inc., New York, N. Y.
Sun Oil Co., Philadelphia, Pa.
Texas Co., The, New York, N. Y.

OIL SEPARATORS
King-Zeero Company, Chicago, Ill.
Rex Engineering & Sales Co. Oklahoma City, Okla.

OILS, FUEL
Socony-Vacuum Oil Co., Inc., New York, N. Y.
Sun Oil Co., Philadelphia, Pa.
Texas Co., The, New York, N. Y.

PACKINGS
Frick Company, Waynesboro, Pa.
Vivian Mfg. Co., St. Louis, Mo.
York Corp., York, Pa.

PALLET TRUCKS (MOTORIZED)
The Moto-Truc Co., Cleveland, Ohio

PIPE COILS AND BENDS
Acme Industries, Inc., Jackson, Mich.
Chicago Nipple Mfg. Co., Chicago, Ill.
Frick Company, Waynesboro, Pa.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.
National Pipe Bending Co., New Haven, Conn.
Philadelphia Pipe Bending Co., Philadelphia, Pa.
Pittsburgh Pipe Coil & Bending Co., Pittsburgh, Pa.
Rempe Company, Chicago, Ill.
Vogt Machine Co., Henry, Louisville, Ky.
York Corp., York, Pa.

PIPE COVERING
(See Coverings, Pipe and Boiler)

PIPE WELDING
Acme Industries, Inc., Jackson, Mich.
National Pipe Bending Co., New Haven, Conn.
Philadelphia Pipe Bending Co., Philadelphia, Pa.
Pittsburgh Pipe Coil & Bending Co., Pittsburgh, Pa.
Vogt Machine Co., Henry, Louisville, Ky.

PIPING
Acme Industries, Inc., Jackson, Mich.
Byers Co., A. M., Pittsburgh, Pa.
Frick Company, Waynesboro, Pa.
Martocello & Co., Jos. A., Philadelphia, Pa.
National Pipe Bending Co., New Haven, Conn.
Philadelphia Pipe Bending Co., Philadelphia, Pa.
Pittsburgh Pipe Coil & Bending Co., Pittsburgh, Pa.
Refrigeration Engineering Corp., Philadelphia, Pa.
Rempe Company, Chicago, Ill.
Vogt Machine Co., Henry, Louisville, Ky.

PRESSURE BLOWERS
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Martocello & Co., Jos. A., Philadelphia, Pa.
Refrigeration Engineering Corp., Philadelphia, Pa.
Roots-Connersville Blower Corp., Connersville, Ind.

PROPELLERS
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Martocello & Co., Jos. A., Philadelphia, Pa.
Refrigeration Engineering Corp., Philadelphia, Pa.

PUMPING MACHINERY
Aurora Pump Co., Aurora, Ill.
Deming Co., The, Salem, O.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Layne & Bowler, Inc., Memphis, Tenn.
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Roots-Connersville Blower Corp., Connersville, Ind.

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Deming Co., The, Salem, O.
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York Corp., York, Pa.

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Ice Plant Equipment Co., Inc., Philadelphia, Pa.
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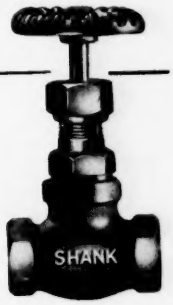

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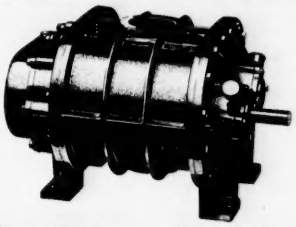

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WANTED—Successful ice pick representative or jobber desiring exclusive territory with leading ice pick manufacturer. Recommend immediate reply; openings made possible through new sales program. Write Apex Products, 48 West 22nd St., New York City 10, N. Y.

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30- 40- 50-Ton Ice plants.
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1—10"x10" York ammonia compressor 200 R.P.M.
1—9"x9" York ammonia compressor 200 R.P.M.
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Assorted sizes electric hoists ranging from 2 to 6 ton capacity.
1—Gifford Wood Uline Scoring Machine Series No. 3.
1—Gifford Wood four tier, ice tiering machine.
2—Shell and tube submerged type brine coolers—36"x12"x143"—2" tubes.
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Brine coolers, double pipe 2" atid 2" horizontal brine coolers, submerged shell and tube type, 1¼" and 2" ammonia coils approximately, 10,000 feet. Send us your requirements on any equipment you may need.

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FOR SALE — 90—1½" T's with flanges; 100—2" T's without flanges; 35—3" T's without flanges. New; never been used. All 20% off. Mojonnier Bros., 4601 W. Ohio St., Chicago 44, Ill.

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238—400 lb. cans, 11½" x 22½" x 57". Entire plant installed new in 1921. S. L. Young & Sons, 405 N. Franklin, Austin, Minnesota.

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FOR SALE—Curtis air compressor, 2 cylinder 8x8 vertical, single action, belt driven, complete with 10 h.p., 220 volt AC electric motor. National Ice & Fuel Corp., 38 S. Dearborn St., Chicago 3, Ill.

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FOR SALE—Brand new, latest type ammonia compressors; 1—8"x8" Frick, 2—5"x5" Worthingtons, 1—5½"x5½" Vilter, all with V-belt drives, also new 60 h.p. motor. All priced right. Address Box AP-14, Ice and Refrigeration, 435 N. Waller Ave., Chicago 44, Ill.

FOR SALE—One 4x4 twin York and two 3x3 twin Fricks self-contained units. 4x4, 5x5, 6x6, 7½x7½, 8x8 and 9x9 York compressors, splash lubrication. One 20 and one 40 ton Vogt horizontal shell & tube condensers. One 2 h.p. vertical agitator. Write E. Niebling, 1318 St. Clair Ave., Mt. Healthy, Cincinnati 31, Ohio.

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FOR SALE—2 Arctic 9x9 with motors, York 9x9, York 5x5 self-contained unit, Baker 4½x5 self-contained unit, Frick 6x6; small compressor units; 288 Arctic Pownall ice cans; 40 ton shell and tube ammonia condenser, 12" x 10' ammonia receiver; 36" x 10' shell and tube brine cooler; 5 h.p. vertical agitator; 3 h.p. Hoffman blower, coils, fittings. 1 each, 150 and 180 h.p. Fairbanks-Morse Diesel engines. Belted type generators, motors, oil storage tanks. Parke Pettegrew & Son Co., 370 W. Broad St., Columbus 8, Ohio.

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1—15-ton electric driven plant	630
1—600 Can Trunk Coil Type—York Plant, Brand New Tank. *Complete with 10 Can Grids. This plant is equal to new*	631
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3—100 ton shell and tube condensers retubed	919
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1—125-ton, Vertical Shell & Tube, 196 2" tubes	921
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400—11½"x22½"x44"—cap refinished in zinc

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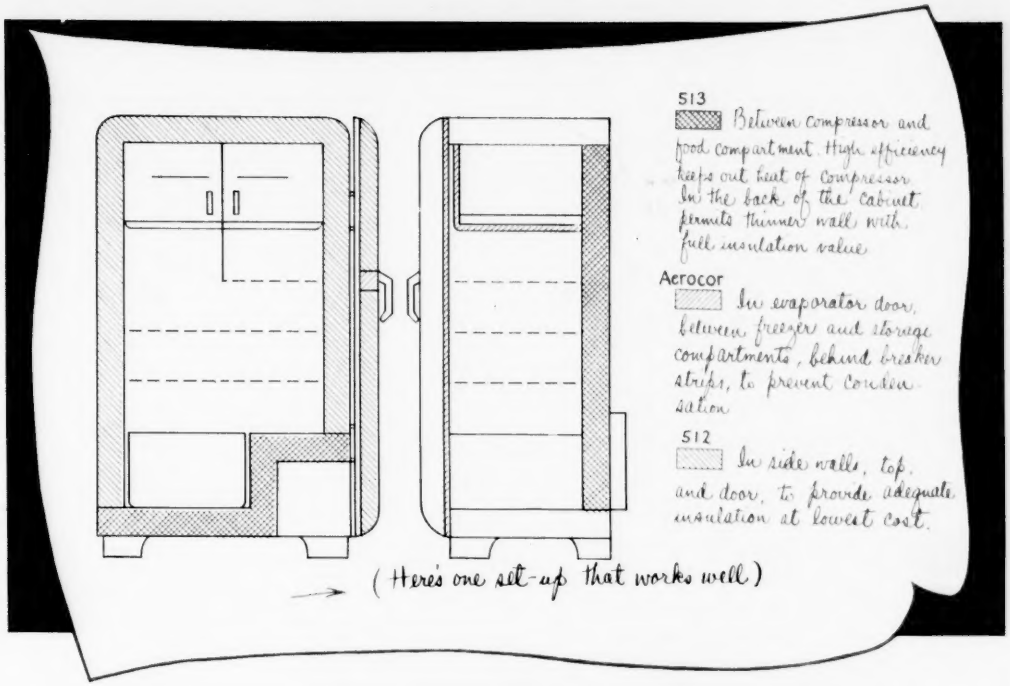

513
Between compressor and food compartment. High efficiency keeps out heat of compressor. In the back of the cabinet permits thinner walls with full insulation value.
Aerocor
In evaporator door, between freezer and storage compartments, behind breaker strips, to prevent condensation.
512
In side walls, top, and door, to provide adequate insulation at lowest cost.
(Here's one set-up that works well)

WHICH IS THE BEST INSULATION for a REFRIGERATOR?

The best insulation for a refrigerator may be a combination of two, three, or even four different materials. But what is the best combination for one design may be all wrong for another.

Choosing equipment insulation that will give you the best results at the lowest cost means tailoring that insulation to your specific cabinet. Choice of the proper materials can improve design in many ways. For example, it may increase efficiencies without changing wall thicknesses or allow for increased interior cubic footage without change in exterior dimensions.

The sketch above illustrates just one method of combining types of Fiberglas to meet the various problems of refrigerator design. There are almost as many other insulation specifications as there are designs of refrigerators. The same thing holds true for all the other types of refrigerated equipment.

To get expert advice on the most practical solutions to your insulation problems, it's a good idea to consult someone who has a line of materials that will meet all your requirements. That's why an Armstrong engineer can be so helpful. He offers a range of twelve different insulations. They include LK® Corkboard, a rigid, load-bearing insulation; Temlok®, a strong, efficient fiberboard, and ten types of Fiberglas.*

Armstrong engineers can prove the effectiveness of their recommendations, too. Before your equipment goes into production, we'll be glad to test it in Armstrong's Life Test Room. A few weeks here is equal to five years in actual use. There's no cost for this service, and you get a completely detailed report on your equipment's performance.

For full information on Armstrong's Equipment Insulation and Life Test Service, call the Armstrong office nearest you or write to Armstrong Cork Company, 4504 Queen Street, Lancaster, Penna.

*R. OCF Corp.

ARMSTRONG'S EQUIPMENT INSULATION

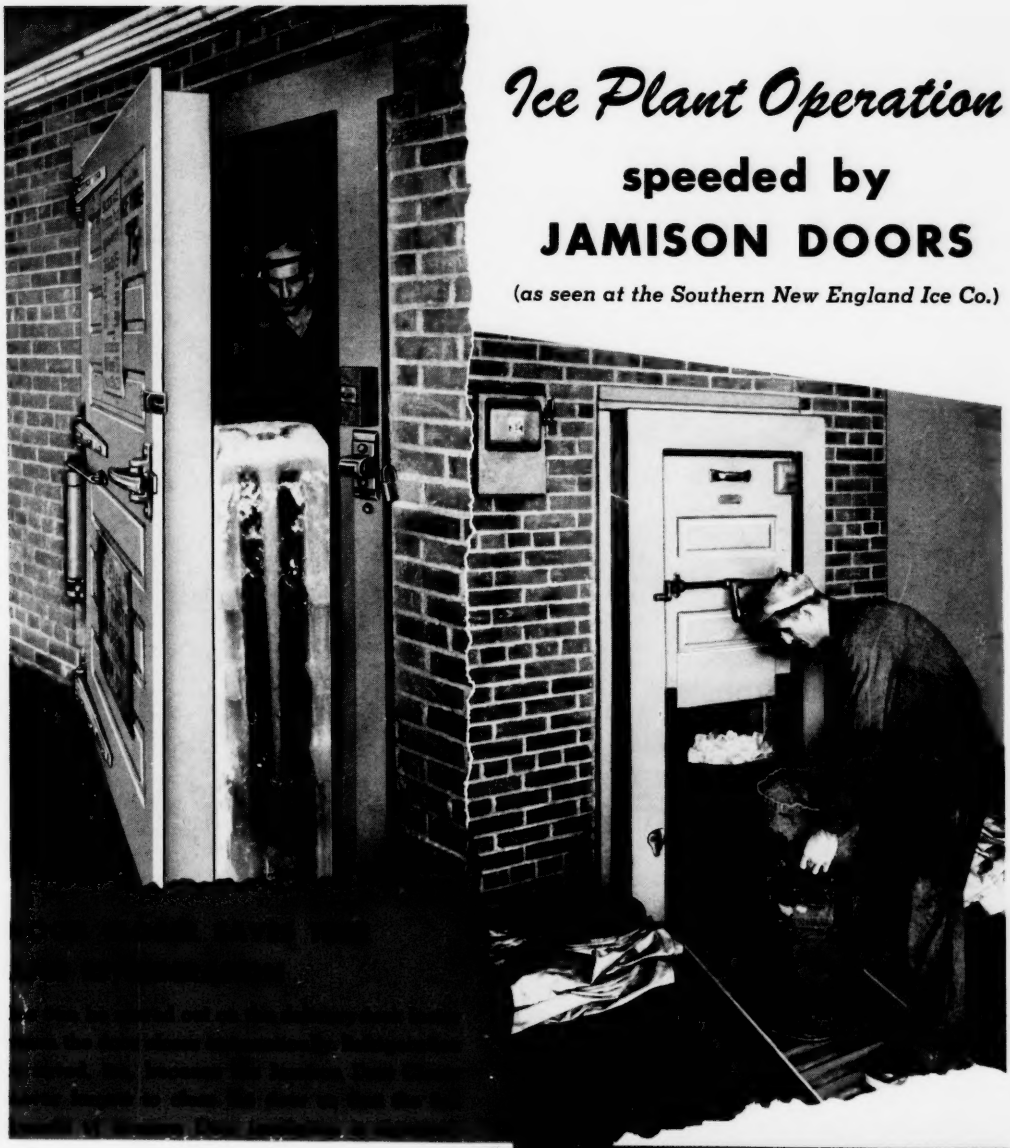
LK CORKBOARD • FIBERGLAS • TEMLOK

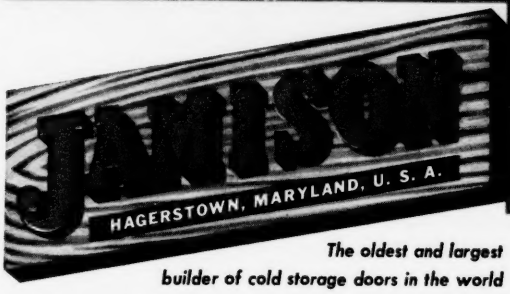
Ice Plant Operation

speeded by

JAMISON DOORS

(as seen at the Southern New England Ice Co.)





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